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ABSTRACT

This handbook describes the Edison Project, a private company that was formed in 1991 to establish partnerships with school districts across the United States. The Edison Project tailors Edison's school design to the local community's needs; upgrades school facilities and brings in sophisticated technology; takes responsibility for daily operation of the school; is accountable to the local community for improving student achievement; and is compensated the amount currently spent by the community for each student's education. The Project creates small schools-within-a-school, called academies. Other features include nontracked student grouping, decentralization, and a year-round calendar. The handbook describes the Edison Project's mission and philosophy, school organization, curriculum, instructional philosophy, system for assessment and accountability, professional-development plan, use of educational technology, the role of families, and central support services. A list of project creators is included. (LMI)

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School Design

The Edison Project

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Partnership schools

make an affordable,

world-class education

possible for every child.

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Partnership School Design

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Our Mission

An Introduction by Benno C. Schmidt, Jr.
President of The Edison Project

This book describes an innovative American school—an Edison partnership school. The Edison Project, formed in 1991, was developed to create schools where creativity, technological sophistication, high motivation, accountability, responsiveness, and other elements that contribute to excellence are the norm.

We aim to create schools that achieve quantum gains in students' academic performance and in the quality of their lives, schools that serve the diverse needs of all students. They will be technologically state-of-the-art. They will be schools where educators are held accountable for the results they achieve, and where they are given powerful incentives to succeed and are treated as professionals.

And we believe we can do all this spending the same amount per student as the average school district now spends.

A Partnership With The Edison Project

The Edison Project proposes to form partnerships with superintendents and boards of public school systems across the country. Under contract to public authorities, we bring our education program and management system into one or more schools in a district. The schools remain public schools, open to all students and funded with tax dollars. We are a private company that provides a service to a public authority—thus, we are accountable to the public.

Communities have had many ideas for ways to forge such partnerships. For example, districts looking to create new schools or to revitalize existing ones are turning to The Edison Project. In states that are creating "charter legislation" for innovative, publicly funded schools freed from bureaucratic and regulatory constraints, Edison may come into a system as a charter school.

In all communities, partnerships with The Edison Project have several features in common.

The partnership works to TAILOR *Edison's school design to the needs of the local community.*

The Edison Project invests substantial private capital in every partnership. We UPGRADE *school facilities and equip the school with sophisticated technology. We also give every partnership family a computer for the home, and we link it to our school network.*

Edison takes RESPONSIBILITY *for the day-to-day operation of the partnership school.*

Edison is ACCOUNTABLE *to the local community for the performance of the school—for higher student achievement, greater family involvement, and enhanced teacher satisfaction, among other things. The local community may terminate Edison's contract at any time if school performance does not meet the terms stated in the contract.*

Edison is compensated only what the COMMUNITY *now spends—from federal, state, and local sources—for each student's education.*

The Edison Project is looking for communities where educators are eager to produce exciting, systemic changes. We invite you to read about our plan and to consider whether your community might be a place where, together, in partnership, we can create great schools.

An Embracing Set of Values

The Edison Project school design is the product of the thought, discussion, observations, and ideas of educators from all walks of school life. It is supported by volumes of research documenting successful education practices from this country and around the world. And everything we do is anchored in a compelling philosophy of education and a set of guiding values.

A powerful set of values should organize, explain, and inspire all teaching and learning. Edison partnership schools base their principles on deep-rooted and well-tested philosophies about the central role of learning in what it means to be human. We believe that every person has an innate desire to know and to understand, and that learning is the most important journey in every person's life. The Edison Project is committed to these principles, which reflect America's best ideals:

LIBERTY — *the conviction that learning is the surest path to individual freedom*

EQUALITY — *the belief that every child should be given the same educational opportunities and that every child has a tremendous capacity for learning*

THE INDIVIDUAL — *the principle that each person's character and individuality are to be not only respected but also celebrated*

COMMUNITY — *the idea that a school can and should be a center for people of all ages who seek kindred spirits, enlightenment, and recreation*

DIVERSITY — *the notion that respecting, celebrating, and learning from our differences is central to what ties us together*

JOY — *the truth that a great school is a place that nurtures the creative spirit, prizes the beautiful as much as the useful, and inculcates a love of learning*

The importance of our philosophical grounding—for the members of our partnership teams as well as for our school design—cannot be overstated. It is the difference between

people who are purposeful and people who are confused; between those who are moved by inspiration and those who move through routines; between those who can be invested with freedom and those who must be surrounded by regulation. It is the difference between schools that are focused and rooted and schools that are distracted and adrift; schools that work and schools that don't.

Ten Fundamentals

With a powerful philosophy to guide it, the Edison school design is founded on ten fundamentals. Radical improvement in any of these areas would bring major improvement to a school, but it is by putting all of them together into a coherent strategy that we can achieve dramatic results.

1. Schools organized for every student's success. We commit to invest our resources in people and materials that directly nurture the growth of students. Each one is a special citizen—part scholar, part artist, part athlete—who deserves an educational community that cares. To achieve that, we've organized small, flexible schools-within-a-school, where teachers work with the same students for several years, getting to know each student well and forming strong, mutually supportive relationships with families.

2. A better use of time. Edison partnership schools follow a schedule that makes sense for families today, adds the equivalent of more than six years to what is now a typical K–12 academic career, and builds in more fun for students, too.

3. A rich and challenging curriculum. We have designed an absorbing curriculum that provides schools and every teacher and student in them with a program of variety and possibility. The curriculum is carefully integrated to help students see the connections between knowledge and ideas and to encourage practical applications of learning. The curriculum is built around five domains: humanities and the arts, mathematics and science, character and ethics, practical arts and skills, and health and physical fitness. And we have set high standards of achievement for each.

4. Teaching methods that motivate. We are committed to vital and diverse instructional strategies that encourage innovation and excitement in teaching and learning. Partnership schools are full of the sounds of discussion, debate, discovery, and delight.

5. Assessment that provides accountability. Edison monitors student progress in many ways to help ensure that standards are met. Students participate in Edison's own portfolio assessment system as well as state and local testing programs. Edison is accountable for student performance on all of these measures. We believe in regular, clear, understandable reporting to families and to the public.

6. Educators who are true professionals. Teachers are at the heart of the partnership schools. They receive the career development, resources, responsibilities, and opportunities that talented professionals deserve. They also find the best possible working conditions in an atmosphere that encourages the highest respect. We consider the principal to be a crucial member of the teaching team as well, and our school design encourages leadership, initiative, and effective management by outstanding and empowered principals.

7. Technology for an Information Age. Our plan for technology puts everyone—students, educators, and families—to work with the powerful information, communication, and construction tools available today. It prepares students for the workplaces of tomorrow. And the technology connects the members of the partnership community. Every family is given a home computer. Every student, teacher, principal, and administrator—everyone on the education team—has access to a personal computer at school and is on a national Edison network. Innovative software puts everyone in touch with a world of ideas and information.

8. A partnership with families. Edison makes a commitment to families to keep them engaged in their children's progress. Student portfolios and quarterly meetings with teachers give family members an accurate and vivid picture of their children's accomplishments and needs. We will also see to it that every student in a partnership school has a caring adult whose responsibility is to oversee school achievement. As well, technology links schools and students' homes, teachers and families, ensuring communication—and plenty of it.

9. Schools tailored to the community. Edison designs about 75 percent of its schools' curricula, working with individual schools to tailor the rest of the program to the interests of each community. In addition, partnership schools are open afternoons, evenings, and summers. They are hubs of activity, bringing together adults and children. Edison also opens its schools' doors to the social services a community can offer, linking service providers with the needs of students and their families.

10. The advantages of system and scale. Every school automatically becomes a part of a national network of partnership schools, linked by a common purpose and plan—and linked literally through our technology system. Every school contributes to, and benefits from, our extensive curriculum- and professional-development efforts. Each has access to an array of specially conceived print and electronic materials to enhance all aspects of the learning program. And every school is served by a facilities department that provides the upkeep, cleanliness, order, and harmony of the building. Thus, when a school forms a partnership with The Edison Project, it joins a family of schools across the country and expands its resources, both human and material.

A Plan to Motivate and Inspire Excellence

Working together, all of these elements of our school design produce a synergy that results in impressive gains for students. Virtually every element of the design has been shown to benefit students in substantial ways. What all this research makes clear is that the typical student should leave a partnership school years ahead of the level currently achieved at graduation. There are many reasons for such gains, as we will explain. But here we want to emphasize one key factor—student motivation. Schools succeed when they take uncommon care to motivate students and to nurture their inherent desire to learn. To foster this desire, the design applies what is known about human motivation in general and the motivation to learn in particular.

Students are motivated when the work they do is important, has meaning, and is challenging. Everyone wants respect and a chance to shine. Our design makes this possible by:

Helping students feel comfortable taking intellectual chances and accepting academic challenges. The Edison curriculum is meaningful; students know that the work they are doing is important, and they know that learning is a vigorous activity. The Edison school design organizes students to make sure that they are secure, viewed as unique individuals, and, most of all, respected. Students recognize that learning often involves making mistakes and correcting errors; it means being comfortable with not knowing.

Schools foster strong, caring relationships between students and teachers through a "house" organization where a group of students works with the same team of teachers for several years. This arrangement benefits students of all ages, especially those approaching high school, who still need a nurturing, supportive atmosphere to succeed.

Improving student motivation by increasing the motivation of the education team. Edison regards teachers and principals as professionals who deserve the freedom to make their schools succeed—and the power to achieve that goal. They have professional as well as financial incentives to further the accomplishments of their students, their schools, and themselves.

Developing strong character. Edison is dedicated to the cultivation of strong character, to the building of courage, curiosity, integrity, leadership, perseverance, and concern for others. Students who demonstrate such qualities are more motivated to achieve because they understand that they have real control over their educational progress. They recognize that all students have the ability to excel, that hard work pays off, and that luck is not the key to success. Students know that their futures are very much in their own hands.

Edison is dedicated to the cultivation of strong character, to the building of courage, curiosity, integrity, leadership, perseverance, and concern for others.

Drawing on the support of families and the community to reinforce a school's educational mission. Partnership schools are integral members of their communities. By seeking the expertise, advice, and involvement of families and local citizens, each school looks to those same individuals to reinforce its educational mission at home and in the community.

Setting high standards and expectations. Psychologists talk of the crucial role of expectations in determining behavior. Educators have observed that students work up—or down—to expectations. Partnership schools have unusually high expectations and match these expectations with strategies to help students meet them. With continuous attention to students' progress and adjustment of instructional methods to individuals, teachers set standards that are ambitious yet attainable.

Using performance standards to motivate. Students know the performance standards they must meet to move from one level to the next. If they meet the standards early, they move quickly on to new challenges. If they need more time, they have it, along with plenty of support.

Emphasizing the intrinsic rewards of learning. Students want to learn when they are intrigued and stimulated. Our language studies are rooted in the world's greatest literature; our science and math, in fascinating insights about the world. Our project-based activities focus on real-world problems that students want to investigate. Through computer networks they take vivid voyages of discovery. On large video screens they meet inspiring people, observe revealing demonstrations, and watch moving documentaries that otherwise would not reach the classroom. Above all, they work and play intensively with committed, supportive teachers and classmates.

A Matter of Faith

We can motivate. Our curriculum inspires. We unstintingly support educators. We pledge to serve. These are among the reasons that The Edison Project and its partnership schools will succeed.

We never underestimate students. We believe that students are capable of scaling vastly greater heights than most are currently expected to achieve.

We believe that they can learn a great deal more, and at much earlier ages, than is usually assumed.

And we believe that beyond their intellectual potential, students are endowed with glorious creative capabilities that need only to be liberated.

It is the duty of a school to identify and to celebrate these gifts. This is the promise The Edison Project makes to the students, families, and communities that invest their faith in our mission.

School Organization

Edison partnerships schools are organized to facilitate teaching and learning. We have embraced a new direction in school organization, one endorsed by many school reformers. The basic principles of our organizational model are simple.

These principles have been shown to ensure effective schools.

- *A clear and ambitious* SENSE OF PURPOSE
- *Strong* ACADEMIC LEADERSHIP *from the principal and the teachers*
- INCLUSIVE OF ALL STAFF— *instructional and noninstructional—as members of its education team*
- *Promoting* PROFESSIONALISM *through the authority, responsibility, support, and opportunity it provides to teachers and administrators*
- *Encouraging* TEAMWORK *and a collective commitment to excellence*
- *Integrating principles and practices of* ACCOUNTABILITY
- *Allowing teachers and administration to* KNOW ALL STUDENTS *as individuals*

These principles are pursued not only in our model of school organization but also in our entire school design.

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This chapter describes how that organization works for students and staff and how the creation of smaller schools and a longer school day and year promote greater academic success and, overall, more enjoyment of teaching and learning.

Student Organization

ACADEMIES

We have created smaller schools-within-a-school, called "academies," where it is easier for teachers and principals to know one another as individuals and to work as a tight-knit team, and where students generally do better. The Edison program is made up of six academies:

THE READINESS ACADEMY: *children ages three and four*

THE PRIMARY ACADEMY: *kindergarten through grade 2*

THE ELEMENTARY ACADEMY: *grade 3 through grade 5*

THE JUNIOR ACADEMY: *grade 6 through grade 8*

THE SENIOR ACADEMY: *grades 9 and 10*

THE COLLEGIATE ACADEMY: *grades 11 and 12*

The educational program also is organized by academy. As explained in the chapter on curriculum, Edison's curriculum is based on clear standards that define what students will know and be able to do. Each academy has its own standards that define where students will be in their educational development before they move on to the next academy. Because each academy is a two- or three-year experience, most students have ample time to satisfy these high standards at their own pace.

The curriculum is well integrated, with each subject reinforcing the others and explored in real-life contexts. To help further this integration, each academy is characterized by a distinctive, multidisciplinary theme. The Primary Academy, for example, uses "the garden" to help teach science, math, geography, literature, and history. The Collegiate Academy provides all students with a "small college" experience, culminating in a multidisciplinary project that pulls together their varied classroom experiences. Successful schools begin with a clear sense of purpose, and our academies are especially strong at achieving such a focus.

HOUSES

Within each academy, students are organized into houses of 90 to 120 children, depending on the academy and enrollment, with no more than 360 students overall. Every house includes an equal number of students from each grade in the academy. For example, a house in the Primary Academy might include 35 kindergartners, 35 first graders, and 35 second graders. Students remain with the same house throughout their academy experience, though the makeup of the house changes each year as the oldest students graduate and new students enter the academy.

The Primary, Elementary, and Junior academies each typically contain three houses; the Senior and Collegiate academies generally include two houses. (The Readiness Academy is not organized by houses but by smaller classes of students with two teachers per class.)

Each house is led by four teachers who comprise a team. These teachers work with students from every level of the house. Math, science, history, geography, civics, economics, and language arts are their responsibility.

Art, music, drama, dance, world languages, health, and physical fitness are taught by additional teachers who supplement and complement each team. Students spend roughly two-thirds of their time learning within their houses and the remainder working with other students and teachers in the academy. Instructional grouping is flexible and responsive to particular pedagogical ends.

The house and team structures have many educational advantages.

Teams provide teachers with a CORPS OF COLLEAGUES *with whom they share explicit responsibility for a group of students over a period of years.*

Teachers can build STRONGER RELATIONSHIPS *with students and their families because they are together for years, not months.*

Students are LESS LIKELY TO GET LOST *in a school when they are grouped into manageable units and instructed and advised by a principal and a few teachers who know them well. This is especially important for middle and high school students, who benefit from the guidance of interested adults but do not always get as much individual attention as they need in traditional school setups.*

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Benefits of Flexible Grouping

The multi-age house offers students many chances to learn from kids who are older, younger, and their own age. Classes in music, art, and physical education, for example, contain mixed-age groups drawn from individual houses. Students attend morning meetings with their houses and work on group community-service projects in the same way.

Students grow from such interactions. Younger ones gain from older role models and the assistance and tutoring they offer. Older students learn to lead and to stretch their minds by teaching their peers.

When students are with others their own age—the norm for house-based instruction—the house structure offers an additional benefit. Teachers can accommodate differences in ability because they are accustomed to working at every level of the academy and therefore can individualize lessons more easily.

The house structure enables teachers to accelerate students who are very able in one subject, or who need additional time in another, without having to separate these students from their peers through skipping or repeating grades. For example, a mathematically advanced first grader might work on math with second graders and have reading instruction with kindergartners.

Although students are infrequently grouped outside their age cohorts, there are always exceptions. In the most exceptional cases, students move up to the next academy ahead of their fellow students, or remain in an academy a bit longer. Since students are together for several years in each house, no significant social price is paid if a student is briefly out of step. What is important is that students work within a curriculum until they have satisfied its standards, not until they have worked for a fixed period of time.

Classes

What is most distinctive about Edison classes is that they come in all sizes. Research tells us that there is no one best class size. Two highly respected education scholars—Robert Slavin of Johns Hopkins University and Eric Hanushek of the University of Rochester—have separately analyzed hundreds of class-size studies. Their conclusions are identical to those of the overwhelming majority of the original investigations: Reduction in class size has no significant effect on student achievement unless the reduction is extreme. Schools succeed through the quality of their teachers, curricula, instruction, and assessment. Smaller classes count for less by comparison.

The Edison Project employs enough high-quality teachers to address every student's needs. The pupil-to-teacher ratio in partnership schools ranges in the area of 18 to 1. This is thorough staffing by U.S. and world standards. The average class size in each house is in the high teens or low twenties.

Moreover, the key to effective class organization is not the staffing ratio or the average class size, but matching the class and staffing structure to instructional purpose. Many students can attend a lecture by one teacher. A hands-on lesson is most effective with partners or small groups, allowing the direct participation of each student. Cooperative-learning groups enable teachers to stretch the number of students they can guide, because each small group is responsible for helping its own members grasp the concepts being presented.

The key to effective class organization is matching the class size and staffing structure to instructional purpose.

Edison's team structure gives teachers the capacity to organize classes in whatever way is required for effective instruction. In addition, each Primary Academy employs three tutors to guarantee that every student gets the individualized instruction necessary to acquire strong foundation skills in math and reading.

No Tracking

One final, and very important, point about class organization—Edison does not track students by ability. Every student receives and masters the same ambitious curriculum. The surest way to fail students is to separate those who learn more slowly from those who learn rapidly. Research shows us that once separated, these groups grow even farther apart academically.

The common beliefs that have supported tracking do not hold up under scrutiny. Less able students do not get frustrated and lost in a challenging educational setting. More able students are not held back by their slower peers. Less able learners do best when provided with a rigorous curriculum and the company of more able learners, who in turn do just as well whether their classmates are all fast or a mixture of fast and slow. When necessary, students are placed in temporary ability groups for specific types of instruction. And when appropriate, students are advanced in a subject when standards have been met.

Professional Organization

PRINCIPALS

Managing the academies are the school principals, one for each separate facility. A building containing a Primary and an Elementary Academy, for example, has one principal; a building containing only a Junior Academy also has one principal. Principals are the schools' educational leaders. In this capacity, they are responsible for:

RECRUITING, INTERVIEWING, AND SELECTING TEACHERS *from the local talent pool and from a roster of candidates assembled through a nationwide search by The Edison Project*

EVALUATING *teacher performance, with input from master teachers*

PROMOTING *teachers through the professional ranks and selecting the master teachers who lead each team*

REMOVING TEACHERS *when necessary*

CREATING TEACHING TEAMS *with the collaboration of teachers*

COMMUNICATING *the school's mission to teachers and students, and inspiring them to fulfill it*

OVERSEEING *the implementation of the curriculum*

HELPING *teachers become familiar with and use new materials, as well as reviewing materials developed by teachers themselves*

ADVISING *on instructional strategies*

ASSISTING *with student assessment*

Principals provide vision, encouragement, and know-how. Their priorities are student learning and staff development.

TEACHERS

Schools are organized with a high regard for teachers' professionalism. We hire teachers with talent and expertise, give them the freedom and resources to do their jobs, and hold them responsible for bringing (and keeping) their students and houses up to high standards. The Edison Project recruits teachers who not only are effective instructors but who also have a solid knowledge of their field. Each teaching team, beginning with the Elementary Academy, is staffed by subject-matter specialists collectively expert in reading, literature, mathematics, science, history, civics, geography, and economics. In the Primary Academy, these fields also are covered, but we emphasize reading and mathematics.

This configuration of specialists offers many benefits.

- IT INCREASES THE QUALITY AND QUANTITY OF MATH *instruction in the earliest grades, where American students already begin to fall behind their international counterparts.*
- IT BRINGS SERIOUS SCIENCE INSTRUCTION *into the elementary grades.*
- IT MAKES HISTORY, CIVICS, GEOGRAPHY, AND ECONOMICS MAJOR COMPONENTS *of the K–12 curriculum.*

In addition, specialists in music, art, drama, dance, world languages, and physical fitness teach every student several hours a day. While students are learning with these specialists, their house teachers have at least two hours a day for planning.

The ultimate responsibility for organizing the curriculum, selecting instructional strategies and materials, and performing assessments rests on the team of teachers in each house, with guidance from the principal and with a master teacher on each team responsible for ensuring that the group works effectively as a unit. (See the chapter on teachers and principals for more on master teachers.) Teachers also can look to the Central Services division, or headquarters, of The Edison Project (described in "A System That Serves") for support in reaching their goals.

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SUPPORT STAFF

To help ensure its success, each school is staffed with a number of key support people.

A technology support team provides on-site assistance to the principal, teachers, and other staff as they use all hardware, software, and computer networks, and makes sure that Edison's advanced technology system works properly.

A media specialist works with the technology team and maintains, develops, and facilitates the use of a full-service media center. Each center contains not only books and periodicals but also videotapes, audiotapes, software, CD-ROMs, and on-line access to external databases.

Tutors, three full-time in the Primary Academy, work with one or two students at a time, at the direction of the teaching teams, to guarantee that all students are strong in reading and math fundamentals by the end of traditional second grade.

A director of social services—full-time or half-time depending on school needs—coordinates help from professionals and agencies within the community for students and families. The family social worker helps to solve "noneducational" problems that can make learning difficult.

A director of special programs organizes and supervises the variety of year-round, dawn-to-dusk educational programs and services—before school, after school, in the summer—that are part of each partnership school program.

A professional-development specialist, serving a number of schools, assists teachers with instructional materials, lesson plans, and project ideas disseminated by Edison. This specialist also is a key resource for principals and master teachers, who coordinate and provide much of the professional development at each school.

A partnership director is the local conduit between each school and the Central Services division of The Edison Project.

The local partnership director will be supervising the operations of several partnership schools in a region or district.

- *making on-site evaluations of each school*
- *representing the partnership's interests to the local boards of education*
- *voicing complaints and suggestions from the field to Edison Central Services*
- *helping each partnership principal establish a Board of Friends in the community*
- *coordinating the recruitment and selection of principals*
- *providing backup services for recruiting teachers*
- *working with Edison's professional-development staff to make sure that new teachers meet local requirements for certification or alternative certification*

Although principals deal directly with The Edison Project to fulfill many needs, the partnership director is a local ally to whom they can turn for assistance and advice.

GOVERNANCE

The Edison Project is committed to four key principles of school governance and administration:

Authority is DECENTRALIZED as much as possible.

Each decision-making unit is ACCOUNTABLE for results, rather than routines.

The Edison Project provides CLEAR OBJECTIVES, support, and resources—but little detailed direction (unless requested).

Principals and teachers have UNCOMMON AUTHORITY to shape their students' educational experiences.

Teachers help students meet curriculum standards and are evaluated by principals according to student progress. The Edison Project also evaluates partnership schools and their principals by monitoring student performance.

THE ROLE OF THE LOCAL SCHOOL BOARD AND THE COMMUNITY

When a school board enters into a partnership with The Edison Project to operate a school, it negotiates a contract that promises specific levels of student performance and holds Edison accountable for achieving those results. Day-to-day responsibility for operating the school then is a joint responsibility of The Edison Project and the principal and teachers. Local boards of education do not run the schools directly. That is the key difference in the governance of a partnership school.

Yet Edison wants local input in its school decision making. Toward that end, each partnership school is advised by two important boards.

A BOARD OF FRIENDS *provides input from a range of community leaders, such as businesspeople, leaders of the arts, public officials, representatives from local associations or groups, and others who are keenly interested in helping to integrate an innovative school into the life of their community.*

A PARENT ADVISORY COUNCIL *ensures that the ideas and concerns of families are plugged directly into the thinking of the school.*

A Better Use of Time

Schools cannot make a much bigger difference in students' futures unless they have more time to help students develop and learn. Currently, schools have little influence on students during a summer vacation that lasts nearly three months. During the typical school year, students leave school between 2:30 and 3:30 P.M., in many cases going to an empty home, where they are unsupervised until adult family members return from work. Many high school students attend school only in the morning. No more than half of all seniors participate in sports or other extracurricular activities that would keep them on campus after school. To be sure, there are students who are fully absorbed in their schools' educational mission. But for most kids, schools must do what they can do within the confines of a 6-hour school day and a 180-day school year.

The Case for an Updated School Calendar

Time constraints handicap schools in several ways. First, the time available for academic instruction is limited. Unless schools are willing to eliminate art, music, physical education, and other subjects that are key to the development of well-rounded individuals, they are left with about four hours of academic instruction each day. On top of this, American students have one of the shortest school years in the industrialized world.

Another significant problem with the typical school year is the long summer break, which often results in students forgetting much of what they learned the previous year. Each fall, schools must spend considerable time reteaching. This is an especially serious problem for those students who generally do not get the opportunity for stimulating vacations, summer camps, and other educational programs that help reinforce and retain learning. In this way, long summer vacations are an unintentional source of educational inequality.

Finally, students are motivated to learn by many factors—the influence of a respected teacher, the support of peer groups and families, a strong attachment to the school community, to name a few. School-sponsored sports, clubs, and performing-arts programs all create a sense of community and strengthen the bonds among students and between students and the school. When a school stands empty for much of the afternoon and evening and all through the summer, it is difficult to sustain that sense of community. The school cannot fulfill its potential for influencing each student's life in profound and positive ways.

Students are motivated to learn by many factors—the influence of a respected teacher, the support of peer groups and families, a strong attachment to the school community.

The Edison School Calendar: Longer Is Better

Just as the organization of partnership schools eliminates constraints on principals and teachers and gives them a structure in which they can be more effective, the Edison design of the school year does the same. It gives teachers more time to teach, and, through an innovative year-round schedule that shortens the traditional three-month summer break, it gives students time to relax but not time to forget.

Here are the key points of the school day and year:

Preschool children may attend a four-hour half-day program or an eight-hour all-day program.

For students in kindergarten through second grade, the school day is one hour longer than in conventional schools.

For students in grades three through twelve, the day is two hours longer.

The extended day means that students are in school an additional five or ten hours per school week, adding the equivalent of one and a half days each week to the current school schedule (based on a six-hour school day). And this calculation excludes the before- and after-school programs that students may participate in if their families choose.

Schools are open year-round. Students are required to be in attendance for a total of 210 days (the same as in Japanese schools).

The longer school day combined with the longer school year in effect adds nineteen weeks to the current American school calendar. Tallied over a K–12 career, that amounts to an additional six academic years of schooling.

Using That Extra Time to the Fullest

Naturally, the value of this additional time depends on how it is used. How, then, will schools use their additional time?

The academic year is divided into four 10 1/2-week quarters that stretch approximately from August 15 to July 1. (Local partners may select starting and ending dates.) Each quarter includes eight or nine weeks of regular instruction, followed by a one- to three-week "intensive" during which students probe subjects of their choice. They write in-depth reports, conduct serious academic investigations, and undertake multidisciplinary projects. The intensives help integrate the curriculum and help students develop practical problem-solving skills.

Each quarter ends with a two-day assessment period, which keeps students firmly on track. Students enjoy breaks between quarters, as well as the usual week-long winter and spring breaks and national holidays—vacation time that is available to staff members, too.

Innovative Summer Sessions

At the end of the academic school year, students may take a six-week vacation. But schools also offer a rich summer program, divided into three two-week sessions and taught mostly by regular faculty members who each have one summer session off. Students are encouraged to take summer courses, and those who are behind in their academic work may be required to do so.

All regular partnership students may attend the summer program at no charge. Students from the community also can enroll by paying a tuition fee. Even if students do not attend a summer session, the six-week (rather than twelve-week) break from the regular academic program does much to reduce the loss of knowledge and skills that often happens over the summer.

> A shorter summer break does much to reduce the loss of skills.

A Demanding Yet Stimulating School Day

What does the longer school day encompass? Instructional time occupies six to seven hours a day (less for younger students, more for older ones). About half of this new day is devoted to traditional academic subjects. The other half is given to the less frequently taught but equally important subjects of art, music, health, and fitness, as well as morning meetings—activities that enrich, enliven, and pace a demanding but stimulating day. To ensure that students remain fresh and engaged, teachers provide brief but frequent recesses. In addition, everyone gets a midday break.

Flexible Class Periods

Classes vary in length as teachers provide students with a range of instructional experiences. Because class periods always are ample and generally are tailored to instructional needs, teachers have sufficient time to begin and finish coherent lessons and to reinforce them with group activities.

A Variety of Before- and After-School Programs

Schools are open from 7 A.M. until 6 P.M. on weekdays. The early starting hour allows schools to offer before-school care. From 4 P.M. (3 P.M. for the Primary Academy) until closing, the schools provide a range of programs taught by school staff and community organizations, including performing arts, sports, Girl and Boy Scouts, and music. Regular partnership students can attend these programs at no charge. Local students may attend for a fee, unless the program is volunteer-based, in which case it's free to everyone. These programs add fun, interest, and learning to students' lives and help bind the school to the larger community.

Although after-school activities are voluntary for most students, as they move up in the grades we expect them to spend extra time at school. From the Junior Academy on, students are required to participate a total of two years in sports programs and other extracurricular activities. Adjustments are made, of course, for students who want to take jobs.

A Schedule That's a Boon for Families, Too

The extended school day and year obviously benefit students most, but they are a big help to families, too. The calendar provides relief from the worry of finding high-quality, affordable child care during the hours and weeks school is not in session. Edison's calendar also draws family members to the campus to watch sporting events, hear concerts, and help as volunteers. These activities strengthen the relationship between home and school, and help schools gain the support of family members—support that is vital to every school's success.

Curriculum

A striking feature in the record of human creativity is the number of great achievements of art and intellect that have been produced as teaching materials. Plato's dialogues, Plutarch's *Lives*, Aesop's fables, Gray's *Anatomy*, and countless other works originated as lectures, texts, and even workbooks.

Many stirring pieces of music were conceived solely for students and later realized as art. For example, Bach's *Well-Tempered Clavier* was composed as a teaching tool and can be thought of as an inspiring alternative to the "drill and kill" of repetitive scales. Chopin's études, crafted with mathematical precision to teach specific hand movements, are nonetheless the equal of concertos written for performance.

In our own day, masterpieces with their roots in instruction include Richard Feynman's *The Character of Physical Law* or Paul Klee's *Sketchbooks*. Casebooks written for students are some of the most significant and enduring achievements in American law.

The lesson in all this is clear: When teaching materials are artfully created, one cuts to the essence, focusing on the heart of the matter, avoiding complication and adornment, and inspiring students in a memorable way.

A curriculum can and should be raised to the level of art. This aspiration is at the heart of our "well-tempered" curriculum. Though many of its elements are traditional, they are delivered in dynamic and original ways that together define a program of distinction. But the Edison curriculum is not static. It includes emerging ideas and topics, and students and teachers are encouraged to contribute substantially to the curriculum as well. This chapter describes our program in detail.

When teaching materials are artfully created, one cuts to the essence, inspiring students in a memorable way.

The Edison Curriculum: Key Characteristics

It is results-oriented. Most schools describe their program in terms of what students take and do, how they spend their time, and what resources are devoted to their education. In partnership schools, results—what students *learn*—are what matter, and it is the foremost responsibility of the school to assist every student in achieving these results.

It spans five major domains. Edison's curriculum takes a broad view of education. It is about far more than traditional academics. It covers five domains: humanities and the arts, mathematics and science, character and ethics, health and physical fitness, and practical arts and skills. It aims not just to prepare students for college—though it does so superbly—but also to prepare them for productive lives. Moreover, because the Edison school design rejects tracking or premature specialization, all students receive the same rich and ambitious preparation.

Its standards are high. We believe in the potential of every student and have high expectations for the achievement of all. By the end of the tenth grade, all students (provided they have been with the program a substantial period of time) have the equivalent of a first-rate high school education. By graduation, students are well prepared for Advanced Placement (AP) exams in core academic subjects. In general, Edison's standards equal or surpass the ambitious standards currently being established by educators in every academic field, both in this country and around the world.

It is accelerated. Beginning in kindergarten, students are presented with a carefully designed curriculum that leads to the mastery of long-term objectives. Though we are mindful of what can reasonably be asked of students at various ages and levels of maturity, we believe all students can handle greater challenges than they are presented with in most schools today. We introduce serious science and world languages earlier than most schools; we pursue math, history, and geography more intensively; and we emphasize character building and physical fitness at every age.

Its subjects are integrated. By using an interdisciplinary approach, partnership schools make learning more coherent and more enjoyable. Combined with a flexible schedule that eliminates rigid 45-minute periods for each subject, the Edison curriculum asks students to solve authentic problems that require them to draw on several disciplines to arrive at the answers.

It contains a national core. Students in every partnership school experience a core curriculum that specifies about three-fourths of what they learn. This core ensures that all students are exposed to diverse educational opportunities—experiences that are often reserved for an academic elite.

It addresses local interests and cultures. About one-fourth of the curriculum is locally determined, ensuring that each school addresses the priorities of its own community and that students confront the major issues and interests of their locale.

It is project-based and problem-centered. Partnership schools draw on many techniques to make education come alive. Students learn by tackling tough, real-world problems. They read, write, experiment, and calculate, as well as present their ideas through the visual arts and a variety of media. The curriculum stimulates all of their senses, draws on a range of skills, and uncovers a multitude of talents.

It takes full advantage of sophisticated technology. Technology is integrated into curriculum, instruction, and assessment at every school. Students have ready access to a range of electronic tools, at home and school, and to networks that connect them to teachers, to other schools, and to a rich assortment of databases.

It produces self-reliant adults. We intend to graduate students who are well-rounded, inquisitive, thoughtful, concerned for others, devoted to (and knowledgeable about) democratic principles, and intellectually sophisticated. We want students to be articulate, ethical, healthy, and eager for further learning.

Bridging Disciplines With the Greats

On the surface, the Edison curriculum is organized into familiar subjects and disciplines. Yet these disciplines are intellectually bridged—and animated—by an approach we call the Greats. Students moving through a partnership school are systematically introduced to:

GREAT WORKS — the most enriching books, poems, discoveries, designs, structures, and technological feats—especially those that have stood the test of time

GREAT PERFORMANCES — musical, dramatic, and artistic works—and productions and performances of them—that are of the highest technical and creative quality

GREAT KNOWLEDGE — information that is worth possessing for a lifetime, the knowledge that makes an individual culturally literate

GREAT IDEAS — the thoughts, insights, reasonings, and imaginings that have been most influential in human history

GREAT LIVES — individuals—good and evil, heroic and villainous, ancient and modern, famous and forgotten—who have shaped the world

GREAT PROBLEMS — the dilemmas, puzzles, and questions that have perplexed men and women throughout the ages

By weaving the Greats throughout the Edison curriculum, schools make learning vivid, fascinating, and relevant to students' lives and help them learn to think across disciplinary boundaries.

Early Childhood Education

Ambitious education goals are more easily met when students begin pursuing them when they are young. The Edison school design begins with the Readiness Academy, which welcomes children starting at age three. Although this is two years before most students in the U.S. begin formal schooling, we believe strongly in an early start. Young children learn at a rapid rate. If thoughtfully directed and guided, this natural inclination can produce important intellectual and social gains.

In designing our approach, we drew on the many outstanding early education models already working throughout America, the highly regarded work of the Reggio Emilia preschools in Italy, the best preschools in Japan and other parts of the world, and our own experiences as teachers and parents of young children. We also consulted with outstanding classroom teachers and other education experts.

Edison recognizes the danger of rushing students into academic challenges beyond their levels of development. Unreasonable demands—such as prodding all children to read by age three or four—create frustration and breed resistance to learning later on. Yet learning can and should begin early. Young children are fascinated by their natural surroundings, a trait that leads naturally to science investigations. Children this age can make great strides in learning another language, and the curriculum introduces all students to Spanish in the Readiness Academy. For students whose first language is one other than English, instruction in English begins.

BUILDING A FOUNDATION FOR LIFELONG LEARNING

The Edison curriculum for three- and four-year-olds builds a foundation for lifelong learning. The program is designed primarily around purposeful play, with opportunities built in for developing social and motor skills.

The readiness curriculum is not only developmentally appropriate, it's fun. A typical Readiness Academy is a beehive of joyful activity: children sorting or creating patterns with colored beads, painting at easels, pouring water in and out of containers of various shapes and sizes, arranging and stacking blocks—all engaged, excited, and delighting in their tasks. Because Edison's early education program provides such a strong foundation for later learning, we encourage partnership schools to help local families take advantage of it, particularly disadvantaged children, who research shows benefit greatly from an early start.

Beginning with the Primary Academy, all students embark on a curriculum of scope and distinction, divided into five major areas. The remainder of this chapter describes each area in turn.

Humanities and the Arts

A productive adult life is profoundly determined by the ability to communicate—to read, write, speak, and listen. Yet communication takes many forms, as the arts—music, dance, visual arts, drama—demonstrate so vividly. In the area of the humanities and the arts, the Edison curriculum is designed to produce articulate, expressive students who recognize and appreciate the richness and texture that the arts and literature give to life. It is also designed to provide students with a thorough understanding of the world in which they live and will work someday—its history, interdependence and geography, and political and economic institutions.

ENGLISH AND LANGUAGE ARTS

Words are basic. It is a rare individual who can think through a complex idea without putting words to paper or computer screen. To an overwhelming extent, the archive of human knowledge is written, meaning that those who can read swiftly and analytically, and retain what they read, are better able to take advantage of this storehouse of ideas.

Speaking and listening skills are no less important. The ability to express one's own ideas and to understand those of others is closely related to the ability to read and write. All are powerful tools of logic, as is visual literacy. Video and other forms of visual media are increasingly prevalent means of communication.

Reading, Writing, Speaking, Listening, and Viewing

The Edison curriculum fosters high levels of literacy in each of these areas. The first step is making sure that all students have strong reading skills by the end of the second grade, when they leave the Primary Academy. Too many kids struggle through school because they never acquired the skills needed to read to learn.

Students learn to express themselves creatively in fiction-writing classes. They hone the art of nonfiction writing by becoming "journalists" and reporting on their world.

The curriculum is equally committed to writing, which is a daily activity beginning in the Primary Academy and is developed and evaluated throughout the curriculum. Students learn to express themselves creatively in fiction-writing classes. They hone the art of nonfiction writing by becoming "journalists" and reporting on their world, as well as studying nonfiction writing in books and magazines.

Speaking and listening are highly valued as well. From kindergarten on, students learn how to organize their thoughts for oral presentations. They also get lots of practice speaking, presenting, listening, and questioning.

Finally, we emphasize viewing skills, as visual literacy is increasingly important in today's world. Students learn to be informed and intelligent viewers who question what they watch just as they question what they read. Critical observation of video and other forms of media is a prominent feature of the Edison technology system. A unique strength of the curriculum is the preparation it provides in the use of new and powerful communication tools.

Emphasizing Literature and Latin

Edison's language arts curriculum has other outstanding features. To help students gain a firm grasp of the English language, we introduce Latin in the Junior Academy. To help students develop a passion for reading, we emphasize great contemporary and classic literature. By graduation, long-time students have read many of the world's great books and written incisively about them—and are well prepared to pass AP exams in literature and writing.

As students progress through the academies, here is more of what the English and language arts curriculum includes at each level.

Primary Academy

To ensure that every student learns to read and write well by the end of second grade, Edison encourages schools to employ multiple techniques, with emphasis on such proven methods as cooperative learning and tutoring. Phonics, word-attack, comprehension, and study skills

are explicitly taught through a literature-based approach that features classic contemporary stories, fables, fairy tales, and folktales, in addition to expository texts.

The writing program involves keeping daily journals and individual writing portfolios. The early goal is to promote enthusiasm for writing. As students become more adept at writing both fiction and nonfiction, they focus on spelling, grammar, and punctuation as well as content. Ample access to computers encourages editing and revising, as well as offers experience with multimedia presentations.

Elementary Academy

Here students solidify their grasp of the essential tools of English. They gain strong skills in reading, writing, and speaking in all disciplines and deepen their understanding of more sophisticated literature and nonfiction works. They read poems, plays, speeches, and biographies, as well as novels and short stories. They memorize passages from great works for intellectual discipline and for a grounding in cultural literacy. Students also focus more attention on the rules and structure of proper English, vocabulary growth, oral fluency, and public speaking. By the end of this academy, they complete their first multimedia project.

Junior Academy

During these pivotal middle grades, students attain mastery of the essential elements, structures, and conventions of English. They expand their vocabulary and strengthen their ability to write and speak effectively. They not only read good literature and expository texts, but also learn how to analyze them and relate them to history, geography, the arts, science, and other fields.

Students write creative, expository, and analytic prose and study poetry and drama. The quest for effective oral communication leads to experiences in extemporaneous speaking, recitations and readings, and theatrical performance (in conjunction with arts instruction). Latin instruction helps students understand the structure of many English words.

Senior Academy

With the mechanics well in hand, students in the early high school grades are ready for in-depth study of literature and nonfiction works. Since these are the years when Edison's history program concentrates on U.S. history and the modern world, students read American literature and look for connections between what happened and what was written. They examine ways events are better understood through reading treasured literary works.

Collegiate Academy

Besides analytic, expository, and creative writing at the college level, students in the final years of a partnership school read with understanding the major works of literature and philosophy. In turn, they link ideas from those readings with parallel study in other fields, such as political economy and European history. Each senior undertakes an interdisciplinary project that ties together his or her interests and serves as a vehicle for a sophisticated multimedia presentation.

History/Geography Civics/Economics

History, geography, civics, and economics form another major element of Edison's academic curriculum. To understand any human event, it is essential to understand its geographical and historical context. Human events are influenced by the social systems in which people live and work, especially by political and economic systems; thus the need for an emphasis on civics and economics. The curriculum in these fields prepares all students to be effective citizens of this nation and the world. It gives equal weight to the accumulation of specific knowledge, the development of skills that enable students to use that knowledge, and the inculcation of a commitment to good citizenship and the principles of democracy.

INTEGRATED AND RELEVANT

The four disciplines are frequently integrated into the whole of the Edison curriculum, and history is the unifying element between these disciplines and the rest of the curriculum. Students study the history of literature, art, music, mathematics, and science to acquire a vivid picture of the evolution of civilization. Geography helps students understand the importance of place in determining how people live. As they study economics, they use statistical analysis to understand social policy. Thus the formerly dry pursuit of "social studies" springs to life, replete with heroes, tyrants, and exotic journeys.

Students do not miss out on their own times. Current affairs play a huge role in the curriculum. Students see how academic knowledge helps them better understand daily world events. In time, they are able to analyze such public-policy issues as health care or foreign trade using a rigorous economic framework, to reason through the constitutional issues in major cases before the Supreme Court, to recognize the role of race, culture, and religion in world affairs.

Following are highlights of what students study as they advance through these exciting fields.

Primary Academy

Students meet important concepts through engaging stories, songs, poems, and hands-on activities. They develop "historical imagination" by reading about George Washington, Harriet Tubman, and other great Americans. They learn about patriotic symbols, such as the national anthem and the U.S. flag. In geography they begin to understand their location and its relation to neighboring towns, states, and nations. They acquire simple concepts in economics and civics—goods, services, and scarcity in economics, and democratic rights and majority rule in civics—in the context of meaningful activities, such as a trip to a neighborhood store or county courthouse. Projects provide the means for developing a host of other concepts and skills, such as gaining a sense of time and chronology through building time lines or identifying places and locations on student-drawn maps.

Elementary Academy

The theme of the elementary years is captured by the phrase "From Dinosaurs to Discovery." In grades three and four, students study major developments from the beginnings of Earth, through the age of the dinosaurs, up to the modern launch of the space shuttle *Discovery*. Students acquire a sense of the scale and chronology of events—and their place in this vast measure of time. Opportunities for interdisciplinary study abound, especially in conjunction with investigations in the science curriculum (such as astronomy and cosmology, geology and plate tectonics, and major changes in Earth's atmosphere).

The last year of the Elementary Academy, grade five, is devoted to students' first serious examination of major events in U.S. history, including colonization, the Revolution, the Civil War, immigration, and industrialization. The civics learned in the first two years, which focused on local government, is now applied to a study of the larger role of the Constitution and the federal system. Students draw on what they have learned about geography to explore the influence of the physical environment on where people settle in a new land; they also solidify their grasp of major topographical features and acquire a more detailed knowledge of this country. And they learn fundamental concepts in economics, such as supply and demand, markets, and inflation, through historical applications.

Junior Academy

The Junior Academy begins the rigorous five-year study of U.S. and world history. Sixth and seventh graders focus on world history and geography, including ancient civilizations, such as the Mesopotamians and Mayas, and intensive study of the Egyptians, Greeks, and Romans. Eighth grade topics include the Middle Ages, the Vikings, and Colonial America. The development of democratic government and ideas, ultimately in the context of the United States, forms a key strand of historical study beginning with Greek and Roman

times. Students also learn more fundamental concepts in economics—including equilibrium, monopoly and oligopoly, gross national product, fiscal policy, and growth—in the context of history and current events.

Senior Academy

Ninth and tenth graders complete the basic chronological study of high school–level history up to the present day. The first year focuses on the birth of modern society with the Renaissance, Reformation, American Revolution, and framing of the U.S. Constitution, and covers some of nineteenth-century history. The second year finishes the 1800s and focuses on this century, ending with current political and social issues. Students also are introduced to modern geographic analyses and use them in making sense of historical developments. Students discuss civic participation in light of current political and legal debates, and analyze and interpret the role of economics in historical and present-day developments.

Collegiate Academy

At this level, students engage in historical and social-scientific study tailored to their specific interests. All teaching is done at the Advanced Placement level. Students are required to complete AP course work in at least one subfield in this broad area: American history or government, comparative history or government, micro- or macroeconomics. In addition, all students participate in a capstone seminar on the U.S. Constitution developed by Benno C. Schmidt, Jr., a constitutional scholar. We also encourage students to become registered voters at age eighteen.

World Languages and English as a Second Language

In line with the aim of equipping students with global knowledge and skills, each student learns two languages in addition to English. The goal is not simply to enhance employment prospects or prepare young people to live and work on a shrinking planet. The study of different languages significantly deepens the understanding of language itself and further enlightens students by bringing into sharper focus cultures other than their own.

Edison begins the study of a second language in the Readiness Academy, where all children whose first language is English are exposed to Spanish, or those whose native language is Spanish begin learning English. Formal second-language instruction starts in the Primary

Academy. Speakers of Spanish maintain their language heritage and expand their Spanish-language abilities as they learn English. While learning English as a second language, they receive assistance through specialized materials, access to new technologies, and attention from tutors.

Students whose first language is one other than English or Spanish also receive ESL instruction and additional support in the most appropriate environment—having all subjects taught in English or in English and their native language.

Learning to Appreciate Language

In all cases, students are encouraged to appreciate language and to use it in a variety of practical situations. They move toward the long-term goal—a standard to be met in the Collegiate Academy—of communicating effectively with a native speaker of their new language. The Edison Project chose Spanish as a second language for most students because of the increasing numbers of Spanish-speaking peoples in the United States.

The Primary Academy is the optimum time to start the formal study of another language because young students enjoy exploring languages and tend not to be self-conscious when pronouncing new words. This early exposure and subsequent years of instruction encourage a high degree of proficiency and fluency. Students who come with a Spanish-language background maintain their native language while learning English.

Emphasizing Conversation and Culture

The early Spanish program emphasizes conversation and culture. Language lessons are conducted entirely in Spanish. Students also learn about countries where Spanish is the native language. As part of their growing awareness of other cultures, students are helped to understand that Spanish is more than just English translated. It is a new way to think and communicate.

Students continue their study of Spanish through the Elementary and Junior academies, gradually developing the ability to read and write as well as converse.

Introducing Latin

In the Junior Academy, students begin an innovative program in Latin. It is taught by a specially prepared English teacher and integrated thoroughly with the history curriculum and many of the academy's intensives. The program provides a firm grasp of basic Latin vocabulary, language structure, and literature, which enhances students' understanding of English, as well as their appreciation of Roman culture.

In the Senior and Collegiate academies, students may continue their study of Spanish or Latin or choose from among at least two other languages, such as French, Japanese, or Russian. Edison also offers instruction through distance learning in languages that are not in large demand on a campus.

All students who have been in an Edison program a substantial period of time are expected, by graduation, to be able to converse with a native speaker of a second language and pass an AP exam in that language.

The Arts

The Edison Project recognizes that the academic disciplines most commonly taught only begin to tap students' creative potential. Some feelings and ideas can best—in truth, can only—be communicated and understood through the arts. The Edison school design places great emphasis on creative expression and skill, as well as aesthetic judgment. Partnership schools approach building students' creative imaginations as seriously as nurturing their intellects.

The Value of the Arts

The arts provide students with exciting opportunities for participation and expression. There is also evidence that art and music may promote academic achievements: Research suggests that some kinds of music and related coursework boost reasoning skills and that spatial abilities are strengthened by serious work in architecture and sculpture. Music, visual art, drama, and dance also stimulate creative thinking, expression, and deeper understanding of other disciplines.

Giving the Arts a Key Place in Every Student's Education

Many schools lack the time and resources to make the arts more than an academic minor. In turn, students do not acquire the kind of understanding of the arts that develops lifelong enjoyment and support of them. The Edison curriculum offers an ambitious program of instruction in music, visual arts, drama, and dance—an extensive and creatively stimulating program that spans all academies, not just the primary and elementary years. It is taught by teachers and specialists of the individual arts and gives equal attention to history, performance, appreciation, and practice. At all age levels, students gain a solid understanding of the creative and performing arts and apply that understanding through a variety of media. High school–level students do advanced coursework in particular disciplines, such as art or music, and have the opportunity to prepare for AP exams in these fields.

A Snapshot of the Edison Arts Program

All students spend at least five hours a week in arts classes. Every student learns to read music and sing and is encouraged to take up a musical instrument. In the secondary academies, all students participate for at least two years in a band, orchestra, choral-music pro-

gram, or dance or theater group. Accomplished singing—and yes, everyone *can* sing!—is a signature feature of the music program from start to finish.

All students also apply their creative energies to the visual arts. Painting, sculpture, and design are taught and practiced in all academies, and partnership schools offer extensive after-school activities for students who want to develop their musical or artistic talents.

In this small space, we cannot begin to convey all that students learn in the arts. They study and practice all types of music from folk to classical to jazz. They learn technical aspects of visual art, including depth, light, and perspective in painting and mass and lines in sculpture. They gain a wealth of cultural understanding, as well as aesthetic cultivation, by studying such diverse subjects as classical composers, Gothic cathedrals, African masks, gospel music, ballet, and Greek tragedy. And consistent with the overall philosophy of the Edison program, much of this study is integrated with other disciplines.

Mathematics and Science

All American students must achieve much higher levels of mathematical and scientific literacy. The Industrial Age is over and the Information Age has begun. America's economic future depends on workers who understand and use information systems and solve complex technical problems—endeavors for which formal mathematics is often essential. Mathematics also teaches logical reasoning and analytical methods that are important for a range of emerging occupations.

In science, developments in such areas as agriculture, medicine, energy, transportation, and communications depend directly on advances in biology, chemistry, and physics. Scientific study sharpens the ability to observe, analyze, estimate, interpret, and design. The scientific method teaches the value of thorough research and verification—and healthy skepticism, too. It is also good for democracy to have citizens who are math and science literate. Our government addresses policy issues that are technically complex. Politicians would be held more accountable and policy making would be more effective if all citizens had the knowledge to grasp many of these highly complicated questions.

Edison standards are more demanding in math and science.

For these reasons and more, the Edison curriculum calls on students to undertake a rigorous program in mathematics and science and to meet far more demanding standards than those of most schools today.

MATHEMATICS

By graduation from the Collegiate Academy, all long-time Edison students have attained at least one of two math standards: the successful completion of Advanced Placement Calculus or Introductory College-Level Probability and Statistics. Why are these courses considered standard?

Calculus is the foundation for much college math. It also is fundamental to analytical work in physics, economics, and engineering. As calculators take over the laborious work of number-crunching and computers are programmed to graph and manipulate complex functions, calculus becomes an even more important tool. Thus, students in partnership schools devote more time to understanding the powerful concepts and applications of calculus and less to the arduous mechanics of deriving solutions.

Probability and statistics are every bit as vital. They lay the foundation for analyzing scientific experiments and political, social, and economic data. They are essential to intelligent thinking and voting on public-policy issues, even for thoughtful reading of a newspaper. Probability and statistics also offer a wealth of opportunities for schools to show students fascinating and powerful applications of math to real-life issues and concerns.

Building Systematically to an Accelerated Program

To enable students to do college-level work in these areas by eleventh or twelfth grade, the Edison curriculum starts early and builds systematically into an accelerated and applied program of mathematical instruction. From the earliest grades, students study math in ways that are vivid and practical and that relate math to sports, music, history, and personal experiences.

From the earliest grades, students study math in ways that are vivid and practical.

We also place special emphasis on fully understanding mathematics, on developing an intuitive feel for how numbers, operations, and relationships work. Students should see math as an essential form of literacy that they internalize and readily employ. Toward this end, we emphasize with even the youngest students such skills and concepts as number sense, estimation techniques, judging the reasonableness of answers, spatial sense, collecting and organizing data, relationships among variables, and problem-solving strategies. From the start we concentrate on building the foundations for higher-level mathematics.

We also insist on mathematical fluency. Before they leave the Primary Academy, for example, students firmly grasp all numbers through 1,000, they are adept at basic number operations, they know multiplication facts through 5, and they can mentally calculate any two-digit addition or subtraction problem. Students also learn to use (and when not to use) calculators.

More Time for Math

To achieve these high standards, math is given a greater priority in all academies and more time in the school day than in traditional curricula. Most primary schools devote significantly more time to reading and language arts than to mathematics. In partnership schools, math and reading are on a par during the primary and elementary years. Moreover, primary and elementary students are taught by both reading and math specialists.

In the Junior Academy, the mathematics curriculum is even more ambitious. All students complete first-year algebra before leaving the academy. Yet the curriculum never becomes excessively formal or abstract. Students continue to use math to solve practical problems: They reason with graphs; create algorithms and analytical procedures; use ratios, proportions, and percentages; and work with elementary functions. They also begin learning probability, statistics, and geometry.

All students complete what is typically considered a solid high school curriculum by the end of the Senior Academy. An integrated two-year sequence will provide students by the end of tenth grade with the equivalent of a multiyear sequence in algebra II, geometry, and basic trigonometry. The Collegiate Academy culminates with calculus and college-level probability and statistics.

> Math and reading are on a par during the elementary years.

SCIENCE

Like mathematics, science gets off to an ambitious and early start. In partnership schools, imaginative and effective scientific teaching begins in kindergarten, where teachers nourish and fulfill students' innate curiosity about the world—its wildlife, plants, and natural systems. Here, as in subsequent years, Edison's science instruction provides a wealth of compelling project ideas and field trips that make learning effective and enjoyable. Even the youngest students adopt the methods of seasoned scientists as they analyze, explore, inquire, catalog, and test by means of engaging, hands-on experiences.

To a large degree, the Edison curriculum views science as an integrated field, not as discrete academic specialties. Though we require mastery of biology, chemistry, and physics, these subjects are not taught as independent disciplines until the Collegiate Academy. Before then, the curriculum weaves an endlessly revealing tapestry of the physical, earth, and life sciences. Students experience science in action.

Meeting Clear Standards

The science curriculum is based on clear academic standards and is designed to enable all students to perform certain scientific tasks. What's more, we have clear science standards for even the youngest students, who are naturally drawn to this subject. Our science standards include the capacity to:

EXPLAIN *the ideas, principles, laws, and theories considered fundamental to an understanding of our natural world*

DEMONSTRATE *scientific habits of thinking when encountering natural phenomena and new technological developments*

READ, UNDERSTAND, AND THINK *critically about articles, books, documentaries, and other presentations of science in the mass media*

FORMULATE, *articulate, and consider a rational position on a wide variety of public-policy, legal, and ethical issues related to science*

DESIGN, *implement, and communicate the results of an original scientific investigation*

APPLY *appropriate mathematics to a wide variety of scientific problems and phenomena*

As students progress through the academies, they pursue these standards across a range of substantive contexts. Following are examples of what students explore.

Primary Academy

Students begin to inquire intentionally into the nature of their world. Through hands-on investigations, computer simulations, and reading, they attempt to find answers to questions they pose and are posed to them about how the world works.

Primary investigations include these fields of science:

- *Human, animal, and plant life cycles*
- *Care and treatment of domesticated animals and plants*
- *Understanding and care of the human body*
- *Basic weather patterns, temperature, forms of precipitation*
- *Earth, moon, sun, seasons, climate*
- *Prehistoric life on Earth*
- *Simple machines*
- *Solids, liquids, gases*
- *Heat, light, sound, electricity*
- *The science of everyday things in nature and the home*
- *Stories of scientists*
- *Science in the news*

Elementary Academy

Concepts that all elementary students are expected to master include:

- *Different levels of organization of life: cells, tissues, organs, individuals, populations, species, and higher taxonomic groups*
- *Heredity, variation, diversity, adaptation, and evolutionary forces*
- *Food chains, food webs, and ecosystems*
- *Changes in Earth through time*
- *The solar system, galaxies, and the universe*
- *The water cycle*
- *Energy: heat, light, sound, electricity*
- *Solids, liquids, gases, and changes of state*
- *Physical and chemical properties and changes*
- *Simple machines, forces, and motion*
- *Electricity and magnetism*

Junior Academy

Students in each grade study two themes that cut across all science fields and introduce or reinforce many of the major concepts necessary to scientific literacy.

6th grade:	*The Human Body System*
	Interactions of Matter and Energy
7th grade:	*Forces in Nature*
	Change: From the Origin of the Universe to Earth Today
8th grade:	*Earth System Science*
	Biological Evolution

The weave of science with other disciplines is particularly apparent in the Junior Academy. The development of technology and scientific thought is integrated into the history curriculum. The math curriculum includes quantitative examples from students' science studies and reinforces skills needed to perform calculations required for those studies.

Senior Academy

Students pursue an original course of study in integrated biology, chemistry, and physics. This two-year sequence provides students with basic understandings of science equivalent to current high school biology, chemistry, and physics. It introduces concepts in one discipline that are needed to understand concepts in another. This eliminates the reteaching of overlapping concepts, although some concepts may be covered in greater depth at a later time.

A parallel laboratory program stresses both lab and quantitative methods, such as data analysis, statistical analysis, and stoichiometry. The quantitative methods also are integrated into the math curriculum at appropriate points.

Collegiate Academy

Extending their knowledge and understanding of science, all students take at least one year of an Advanced Placement course in biology, chemistry, or physics, although some students take all three by graduation.

During the two-year Collegiate Academy, all students:

- *Complete an original laboratory investigation*
- *Participate in an interdisciplinary seminar on ethical issues in science and technology*
- *Keep a journal on current issues and developments in science*

Character and Ethics

Partnership schools are public institutions that foster the democratic principles and basic ethics that most families, and citizens in general, support. Most people agree that schools should help students understand the value of democratic government, justice, respect for personal liberty, and equality before the law and foster in students such fundamental aspects of good character as honesty, kindness, courage, and integrity. In this sensitive but crucial area, publicly supported schools have a responsibility to serve the common good by raising responsible citizens and to serve families by reinforcing their best efforts.

Partnership schools aim to do just that. They are ethical places that clearly state their principles, practice what they preach, and connect everything they do to a coherent philosophy of beliefs. In designing our program, Edison is mindful that a school is only one influence on a student's character and ethics. But a school is a very important influence—inten-

tionally and unintentionally. The Edison character and ethics curriculum exercises that influence with care and thoughtfulness.

COMPLEX ISSUES

Partnership schools work closely with families and communities to create an environment that supports the basic values and character traits most families want their children to acquire. Edison avoids relativistic approaches focused only on "values clarification" or pointless "moral dilemmas" that can do more to confuse students than to teach them.

At the same time, Edison believes that reasonable people of good will can, and do, disagree sharply on complex social or political issues, and we encourage intelligent and educated disagreement. Our approach respects students' privacy and conscience, as well as the family's primary role in this area. Edison's character and ethics curriculum emphasizes:

HONORING *the rights and responsibilities of American citizenship, including freedom, justice, and equality before the law*

TREATING *others with kindness, respect, honesty, and fairness*

DEMONSTRATING *self-respect, courage, responsibility, and integrity*

SEEKING *truth and wisdom*

APPROACHING *life with good humor and a positive outlook*

APPRECIATING *beauty and creativity*

VALUING *hard work, diligence, and craft*

Educational Principles That Influence Student Character and Academic Success

Schools influence students in a myriad of ways beyond explicit instruction. The educational principles on which the Edison school design is founded include these beliefs:

ALL STUDENTS CAN LEARN. *And when carefully nurtured and taught, every student can learn a great deal.*

INTERACTION *among students and staff should demonstrate respect, honor, and trustworthiness, and evidence a concern for the well-being of others.*

Through the study of great lives, works, and civilizations, students learn much about the PRINCIPLES *by which individuals and societies should conduct themselves.*

A school's primary responsibility is to ensure that students receive an excellent education and that they come to value learning as a LIFELONG PRACTICE.

ACADEMIC RESULTS*—that is, deep and enduring learning—are what really matter.*

Joyous as education should be, it also requires perseverance and time. Hard work yields genuine self-esteem, the kind that develops from authentic ACCOMPLISHMENT.

We respect differences, and we share Dr. Martin Luther King, Jr.'s dream of a society in which individuals "will not be judged by the color of their skin, but by the content of their character."

Teaching Character and Ethics

The culture of a school—the occasions it celebrates, the ceremonies it stages, the customs it maintains—signals much about what it believes. In partnership schools, each day begins with a morning meeting at which students acknowledge the democratic ideals of the nation and the tenets of the school. They discuss relevant moral and ethical issues and hear school and civic leaders present their views on timely topics related to issues of character and ethics.

Students, especially young children, learn ethical behavior through experience, as well as by observing the behavior of others or discussing the actions of characters in meaningful stories. History plays an especially important role in helping students grasp the value, as well as challenge, of democratic ideals.

Although the basic principles of good character are reinforced at every age level, there are areas of special emphasis and discussion at different ages:

READINESS ACADEMY: *self-reliance, perseverance, and social skills*

PRIMARY ACADEMY: *diligence, kindness, fairness, and heroes*

ELEMENTARY ACADEMY: *integrity, friendship, and self-respect*

JUNIOR ACADEMY: *love, family, and beauty*

SENIOR ACADEMY: *democratic citizenship and community*

COLLEGIATE ACADEMY: *wisdom and independence*

As students grow older and are more able to reason and engage in thoughtful discussion, they acquire a deeper understanding of human nature and sound character. With the guidance of caring and committed teachers who work closely with families and support their efforts, students develop into mature, ethical adults.

Edison's character-education program is infused throughout the curriculum. Whether learning chemistry, economics, or music, students have opportunities to weigh ethical and moral issues and to practice the essentials of good character. Once a week, older students participate in a seminar on ethics.

Emphasis on character and ethics extends beyond the classroom. Extracurricular activities play a major role in building positive personal qualities. Team athletics foster sportsmanship; student government offers firsthand experience in practical democracy; participation in clubs, organizations, and activities teaches collaboration.

Confronting a Range of Issues and Diverse Opinions

A school must directly and confidently address a vast range of character, ethical, and social issues. No school in contemporary America can be oblivious to the controversies that buffet our society or to the temptations and dilemmas that young people face. Some involve opposing philosophies of politics and economics; some are rooted in prejudice; others arise from threats to health and safety.

These are never easy matters for schools, any more than they are for students or families. People hold strong and conflicting opinions about what is right and what is true. Some schools respond by becoming doctrinaire, failing to acknowledge that there is more than one view. Others decline to take a stand on important moral issues.

Edison's character-education program does not shun controversy, nor does it fail to distinguish right from wrong. We expect students and staff to conduct themselves in accordance with our stated values. We also equip students with the knowledge and judgment to examine alternatives and develop a sound basis on which to make choices and decisions.

The best discipline is self-discipline. Toward this end, we emphasize personal morality and self-restraint. Younger students are given plenty of guidance. As students get older, they are expected to make more distinctions and decisions for themselves.

Religion

The Edison Project respects the sanctity of private religious beliefs and practices. Partnership schools are nonsectarian. However, in terms of education, the curriculum helps students understand the role that religion has played throughout history and how it shapes current world affairs. Our literature and language courses include the study of all the world's great religions. Our character-education program embraces ethical precepts that are consistent with the Judeo-Christian tradition and are shared by many world religions.

Community Service

In the Edison program, students participate in community-service activities throughout their education. Activities are tailored to students' ages and abilities—such as delivering meals to homebound senior citizens, cleaning up local parks and streams, making holiday toys, or volunteering at a public agency—but at every level students learn the value and rewards of service work.

Students also assume primary responsibility for keeping their school tidy and functional. Service opportunities in school include helping teachers research topics, proctor tests, and coach athletics; serving and cleaning up after meals; landscaping and caring for the grounds; and organizing and managing school events.

Discipline

Partnership schools enforce a clearly stated discipline policy, which is incorporated into every student's Quarterly Learning Contract (described in the chapter on assessment). Violations result in corrective measures and sanctions. The preferred solution is restitution—the righting of wrongs—but harsher penalties, including suspension or expulsion, are imposed when necessary.

Actions that endanger or harm others, interfere with the education of others, or threaten to compromise the core values of a partnership school are considered serious infractions. They include use or distribution of drugs or alcohol; possession of firearms, explosives, or other weapons; criminal activity; physical or emotional abuse of others; mistreatment or threatening behavior; and any substantial interruption of teaching or learning. In cases where local, state, or federal laws may be violated, the school notifies appropriate law-enforcement officials.

Discipline also is promoted through the curriculum. When students are challenged, inspired, and engaged, discipline is less of an issue.

Physical Fitness and Health

The statistics are all too familiar: Twenty percent of American students are obese and risk heart attack and stroke in their adult years. By middle school, nearly 20 percent of students take no physical education at all. Only about half of all adolescents participate in organized physical activity in school or in the community.

The Edison curriculum is committed to improving this picture through a rigorous program of physical education that emphasizes personal fitness, participation in intramural and interscholastic sports, and knowledge of health, nutrition, and safety. We believe that health and fitness are vital, and our clear and ambitious standards precisely define our expectations.

PERSONAL FITNESS AND SPORTS

Starting in the Primary Academy, students create, evaluate, and modify their own personal fitness plans. These plans, based on individual goals, interests, strengths, and abilities, also include attention to proper nutrition and other healthful habits. As students' knowledge of fitness training and conditioning grows, their plans include self-assessments designed to help them track progress and improvement over time.

The goal of Edison's physical education program—from preschool to grade twelve—is to encourage students to choose physical activity and maintain a healthy lifestyle.

The physical education program stresses training and conditioning.

- *Basic movement skills*
- *Personal fitness*
- *Rhythm and dance*
- *Games*
- *Team, dual, and individual sports*
- *Tumbling and gymnastics*
- *Swimming*
- *Personal safety*
- *Self-defense*
- *Outdoor education*

All students participate in physical education classes one hour a day. Partnership schools also operate extensive interscholastic sports programs for high school students, plus intramural programs for younger students, with specific sports left to local discretion. Over the course of the secondary academies, students are required to participate in intramural or interscholastic sports for a total of two years.

HEALTHFUL LIVING

In conjunction with the science and character curricula, schools offer regular instruction in healthful living, with a special focus on the needs of students of different ages and in different communities.

Edison's nutrition program helps students develop heart-healthy eating habits while learning the role of proper nutrition in human growth and development. They distinguish between healthful foods and junk foods, plan menus that meet changing nutritional needs, prepare foods to maximize nutrient retention, and focus on making healthful food choices in all stages of their lives.

In the area of personal safety, students learn, beginning in the first academies, such skills as crossing the street, fire prevention, getting help in an emergency, proper equipment for

biking, skating, or roller-blading, water safety and basic swimming strokes when a pool is available, and safety procedures for frequent natural disasters in their locale, such as earthquakes and tornadoes. A special "street safety" program teaches students to stay safe in their immediate environment and reinforces the basic safety messages most families teach at home. Older students also learn the principles of safe driving and outdoor survival skills, life-saving techniques, self-defense strategies, first aid, and CPR.

Integrated with the character and ethics curriculum is resistance education that teaches negotiation, communication, and assertiveness skills for resisting peer and social pressures to use drugs, alcohol, and tobacco. Young students apply these same skills to protect themselves from unsafe persons and situations. At the appropriate time, students apply these skills in dealing with the physiological, psychological, and emotional challenges associated with puberty.

The healthful living component includes lessons on human reproduction and sexuality. Special care is taken to offer such courses only to students of an appropriate age, and in close cooperation with families and the community. Instruction on these topics is consistently linked with Edison's curriculum in character and ethics.

Practical Arts and Skills

When students graduate from partnership schools, they are ready for life. They have skills that will serve them on the job, at home, and in their community, as well as in meeting the complex challenges of contemporary society.

The Edison curriculum has no separate vocational courses as such. We believe that practical arts and skills are better taught in the context of academic subjects. These skills fall into two broad and overlapping categories: practical skills and workplace skills.

Practical skills refer to those things that a competent person should be able to do, such as read a road map, understand home heating and electrical systems, balance a checkbook, and compute interest on a home mortgage.

Workplace skills are those required for successful participation in the modern workforce. They include teamwork, problem solving, working in organizations, adapting and planning for the future, creativity and design, and technological literacy.

Practical arts and skills are best taught in the context of academic subjects.

Just as Edison expects students to develop academic skills to levels of genuine excellence, we hold similar expectations for practical arts and skills. As with every curriculum area, we have crafted standards, progressively more demanding in each academy, to guide schools and students in shaping and sharpening practical arts and skills.

A Sampling of Practical Arts and Skills

In most cases, practical arts and skills are incorporated into Edison's project-based, problem-centered approach to education. Only when an essential skill, such as keyboarding, does not fit comfortably into the core curriculum is it taught separately.

Here are examples of practical and workforce skills that are part of the curriculum, matched with the age levels and subject areas in which most learning occurs.

Readiness Through Elementary Academies

Telling time *(math and science)*
Dental care *(health and physical education)*
Keyboarding *(language arts)*
Personal safety *(health and physical education)*
Animal care *(science)*
Gardening *(science)*
Finding one's way in an unfamiliar place *(geography)*
Public speaking *(language arts and social studies)*
Basic applied computer skills *(all subject areas)*
Working collaboratively *(all subject areas)*
Designing procedures for solving problems *(all subject areas)*
Finding and organizing information *(math, social studies, science, language arts)*

Junior Through Collegiate Academies

Personal finance: *how bank accounts, mortgages, credit cards, tax returns, and stock exchanges work (economics)*
Photography *(arts)*
Lifesaving and CPR *(health and physical education)*
How the legal and law-enforcement systems work *(civics)*
How an automobile works *(science)*
Social dancing *(physical education)*
Filmmaking *(arts)*
Balancing one's diet *(health and physical education)*
Self-defense *(physical education)*
Teamwork *(all subject areas)*
Designing products or services *(all subject areas)*
Working in organizations *(community service)*
Using technology to design multimedia presentations *(all subject areas)*

In addition to these competencies that students acquire as they move through the academies, other useful skills—such as cooking, carpentry and repair, and parenting and child care—may be learned through extracurricular programs offered after the regular school day.

Technology as a Practical Art

One area of the practical arts that receives a great deal of attention in the Edison curriculum is using technology. Students develop their expertise starting in the Readiness Academy, where they explore the computer mouse and keyboard. Later, students learn to use word processing and other applications, such as databases and spreadsheets. By the Collegiate Academy, all students are proficient in the use of computer technology and apply that skill in creating a full-scale multimedia presentation. In every academy, students develop technology skills through hands-on projects that support learning in all subject areas.

The KID Program in Design

KID (Knowledge, Inquiry, Design), Edison's unique design program, gives students opportunities to apply knowledge drawn from all areas of the curriculum as they design products and procedures to solve a host of different problems. For example, in the Primary Academy, students design a solution to the problem of keeping Peter Rabbit out of Mr. McGregor's garden; in the Senior Academy, they develop ways to make the school's recycling program more efficient. As they work, students follow a procedure that is used by project teams in corporations across the country and around the world:

DEFINE *the problem.*

List ideas for SOLVING *the problem.*

EVALUATE *the ideas.*

CHOOSE *the best solution.*

In this way, the Edison curriculum prepares students for making a smooth entry into the workforce, whenever that may be.

Meeting Local Needs

One of the strengths of the Edison curriculum is that it can be customized to meet the needs of local communities in the following ways.

Schools may add SPECIFIC OBJECTIVES to academy standards to emphasize an area of knowledge or skill that reflects a local priority.

Schools may use LOCAL MATERIALS to teach particular standards. For example, when students learn regions of the United States in the geography curriculum, they use their own region for the illustrative case study.

During the intensives—the one- to three-week periods between quarters—students participate in INTERDISCIPLINARY PROJECTS. Edison provides the project theme for one intensive each year, and the others are created locally.

For the first time, elementary and secondary TEACHERS CAN CO-CONSTRUCT INSTRUCTIONAL MATERIALS the way university instructors do. Publishers often provide professors with the opportunity to select, order, and even add chapters to textbooks to provide materials that are consistent with course outlines. In the same way, teachers in partnership schools can co-construct interactive curriculum frameworks with Edison Project staff that are tailored to local needs and priorities. The frameworks contain outlines of every subject area, strategies for integrating content areas, model lessons, and a variety of instructional resources. Teachers get access to, add to, and adapt the frameworks via computer.

Local teachers may develop materials that become part of Edison's "SELF-TEMPERED" CURRICULUM —one that endures as a work of art.

Instruction

In a great school, curriculum and instruction are inextricably linked, for what students learn often depends on how they learn it.

The previous chapter described a curriculum with major implications for instruction, one that although comprehensive in the knowledge students acquire, is even more ambitious in the skills and habits students develop—for example, to apply knowledge from several fields to a multidimensional project, address real-world problems, work collaboratively and responsibly, pose original questions and conduct original research to answer them, and communicate orally, in writing, and through various electronic media. These expectations all clearly affect how students are taught. This chapter highlights an instructional program that rounds out and supports the Edison curriculum.

Starting with the philosophy that effective learning is active learning, The Edison Project has adapted several broad instructional strategies. Recognizing that students learn in different ways, Edison's instructional program is designed to address varied learning styles. And because research clearly favors some instructional methods over others, we have chosen those with documented effectiveness.

Edison's Instructional Philosophy

We believe that students are naturally curious. They learn by doing and by interacting with their environment. Edison's instructional program is designed to build on students' natural desire to ask questions, to wonder, to explore, and to learn. As John Dewey observed, for young people, school is not preparation for life—it *is* life. The job of a school is to provide students with a rich and varied landscape to explore and to help them develop the skills, strategies, and knowledge they need.

Making School Meaningful and Motivating

On their own, kids will spend hours shooting baskets, playing computer games, or mastering chords on a guitar. Why? After all, much of what they're doing might be called drill and practice—performing the same movements, using the same skills, over and over. The answer, naturally, is that they are motivated to practice because the activity is meaningful to them—it's something they want to do. In contrast, schoolwork is too often presented to students as isolated from the present, as something they will need "later on," not something that is meaningful to their lives today.

Edison's program tackles that problem head-on. Our curriculum is challenging and draws on real-world problems and real-life situations. It rewards students for hard-earned achievements with deserved respect. Our instructional methods are equally motivating. They involve students in applying knowledge and skills from many fields in posing questions and doing original research to find their own answers.

> We have taken special care to develop in students the joy of learning.

Students learn science, for example, not just by learning formulas and vocabulary but by doing science, by being scientists. They ponder the same questions that real scientists do, and they learn formulas and vocabulary because they need them to do real science. Our innovative technology system also makes use of the latest electronic tools to connect students to people and places around the world—live, immediate, meaningful opportunities for discovery and understanding.

Encouraging the Joy of Learning

In developing both the Edison curriculum and our instructional program, we have taken special care to develop in students the joy of learning. Joy is a powerful motivator: A school filled with students who are happy to be there is a very different place from one where students are indifferent or openly hostile to learning. Delight in learning also encourages a lifelong interest in learning. And that, in turn, produces individuals who are productive, involved with their communities, and agents for positive change.

An Elegant Problem to Solve

Perhaps the philosophy of the Edison instructional program is best captured by the engineer and scholar Buckminster Fuller: "Give children an encyclopedia, a dictionary, great resources, and an elegant problem to solve."

We do that. The instructional methods that follow assure that students find the answers they seek and the knowledge and skills they need for success in school and in life, now and in the future.

Project-Based Learning

What is most distinctive about our instructional program is its emphasis on learning by doing. The Edison Project believes in giving students realistic problems to solve through the meaningful application of concepts and content from many subject areas. Students grapple with problems suited to their ages and prior learning, and build their own bridges between the theoretical and the practical. Such activities help students gain confidence with academic material, work creatively, and learn to think for themselves.

Projects achieve results because students learn not only by reading, writing, and calculating but also by building, experimenting, and designing. Projects engage all of the senses and give full expression to the creativity in each student. Those students who are not as adept at expressing their ideas on paper, for example, can communicate through other media, including electronic forms.

Projects also are excellent preparation for the world of work and home, where people do not face problems or tasks that have been carefully crafted in textbooks. Some types of projects we employ—science experiments, for example—are found in any good school. Others are new to the classroom and unusual because they mirror the real work of scientists, engineers, architects, designers, reporters, and others.

Planning "Intensives" and Other Projects

The flexible school day and year provide many opportunities for project work. Block scheduling enables teachers to weave projects into the ongoing curriculum. No project need be rejected because it won't fit into a 45-minute period or an already tight academic quarter. Particularly important for accommodating the important work of projects are the one- to three-week intervals reserved at the end of every quarter for what we call "intensives." At these times, students undertake ambitious projects, analyze complex problems, and pursue specialized avenues of inquiry that are beyond the scope of the regular daily schedule. The intensives help students develop practical skills to apply to other sophisticated problems presented throughout the curriculum.

Because projects require a greater investment in time than other types of learning activities, they must focus on the most important concepts and skills in the curriculum. Engaging as a project may be, it is not wise to devote several weeks to learning objectives that are of limited importance. To assist schools in making the best use of project-based instruction, Edison has launched a program to provide principals and teachers with project plans that have clear curriculum objectives and proven success.

Here are sample projects that students may tackle, working in groups or independently.

"How are cities built?" Students work together to build their vision of their own community a hundred years from now. Each student is given a plot of city land on which to build a structure. Everyone in the class has a city job to do, such as mayor, superintendents of education and transportation, and so on. Over the course of several weeks, students learn about architecture, building scale models, and what makes a city work—from garbage collection to emergency preparedness to reaching a consensus on important community issues. Our project is based on "City Building," a project-based curriculum developed over the last twenty years by Doreen Nelson and the Center for City Building Education in California.

"Can you make a robot?" Seymour Papert, a world-renowned mathematician, is developing a series of projects for Edison around the theme of powerful ideas. For example, students in the Primary and Elementary academies will examine the idea of feedback by building robots that move across a space in a variety of ways or by developing computer programs that guess numbers. To accomplish these tasks, students learn such higher-level math concepts as successive approximation and are introduced to equations and algorithms in the meaningful context of needing them to accomplish their goals.

"What makes nature violent?" Students examine a dramatic natural event such as a tornado, hurricane, earthquake, or blizzard, preferably one that has occurred in or near their community. They build a simple model that illustrates the phenomenon—clay plates that rub against each other to cause an earthquake, for example. They also review emergency preparedness plans and write a manual of emergency procedures for students.

"How do things work?" This hands-on science course, developed in conjunction with a group of scientists and industrial designers, introduces students to machines, their construction, and the principles that drive them. Every student learns how to put a bicycle together and why it works; takes apart and reassembles a household appliance, such as a vacuum cleaner; and understands how an engine functions.

"How are products designed and marketed?" In preparation for this project—which draws on students' grasp of science, math, economic principles, and writing and viewing skills, as well as imagination—students learn to take apart and put together a bicycle. Then the class divides into teams to tackle this challenge: Design and build a vehicle, or a model of one, that has more than two but not more than four wheels, an electric motor, and can carry one or more persons. Each team must demonstrate in some way that the vehicle will run. Teams also provide step-by-step drawings, with instructions, that another person could use to build the exact same vehicle. To complete the project, each team devises a plan for bringing the vehicle to market, which includes an analysis of manufacturing costs, a proposed retail price that guarantees a profit and stays within what the market will bear, and an advertising campaign for getting the vehicle before the public eye.

"How do I get to the other side?" A group builds a real bridge across a stream or between two buildings. This project demonstrates an understanding of physics, engineering, and design and incorporates the use of various engineering tools and techniques.

The Importance of Integration

As demonstrated by these project examples, Edison's integrated curriculum—wherein traditional subject lines are crossed to promote deeper intellectual understanding—helps students make connections between subject knowledge and ideas and see how what they learn in school applies to real life. It gives students the chance to work with problems that have no preformulated solutions. Teachers bring several disciplines to bear on one practical problem, as when students make an environmental study of their town, drawing on and expanding their knowledge of geography, history, science, mathematics, literature, and politics, then develop a proposal to create a nature sanctuary on public land. In working out the

concept and a plan based on it, students see vividly how different areas of academic content apply to real life. And when areas of knowledge are connected, learning has more chance to "stick."

Sometimes only two disciplines are brought together, as when science and math are used in the design and implementation of an experiment. Once the scientific experimentation is complete, math skills come into play in the analysis and presentation of the results. When these areas of knowledge are applied and connected, learning in both becomes more concrete.

Integrated teaching also is an enjoyable way to learn and to teach. It often involves hands-on activities, such as taking soil samples, which engage and excite kids. And it frequently blends art or music into a project, allowing artistically talented students to shine.

Students make connections between subject knowledge and ideas and see how what they learn in school applies to real life.

Direct Instruction

When practiced creatively and purposefully, direct instruction is a powerful method. It involves a teacher guiding students through prepared presentations and discussions. Each lesson is circumscribed and constructed to develop a particular concept or skill. A good lesson must have a clear beginning, middle, and end. It must follow a logical intellectual sequence. A series of lessons must be assembled systematically.

Encouraging Active Listenihg and Learning

Successful direct instruction engages students as active listeners and participants. Teachers frame questions not simply to elicit answers but to get students to think, whether responding directly or listening to a classmate's response. In the process, students learn to ask good questions, too.

Watchful teachers also recognize that the errors students commonly make provide great instructional opportunities. Skillful teachers know that students need immediate opportunities to apply and practice ideas presented in a lesson. Effective teachers appreciate the crucial role of swift and constructive feedback, which enables students to learn from their errors. Good teachers know the difference between memorization and knowledge.

Supporting Teachers to Enhance Instruction

To help teachers perfect their skills in direct instruction, Edison provides professional development in lesson planning and pacing, questioning techniques, and discussion strategies, with a focus on what works best for different ages and subject areas. Edison also offers principals and teachers access to classroom-tested lessons, many developed by teachers in partnership schools. Teachers have a hand in setting class schedules, to be sure they have adequate time to start and finish the lessons they plan.

Cooperative Learning

When well managed, cooperative learning is an effective instructional approach that helps many more students learn at high levels. Cooperative learning involves placing students of different ability levels together in small groups and assigning them a specific task. Each group member has a role to fill in completing the activity. Although individual accountability is built in and is a critical component of successful cooperative learning, students also are judged by the work the group produces. Therefore, all members have a stake in helping each group member perform at his or her highest level.

Strategies for Effective Cooperative Learning

The Edison Project employs cooperative learning in many ways in its program, with special attention to the approaches developed by Robert Slavin at Johns Hopkins University. Research shows that the achievement of all students, in rural, urban, or suburban settings, is improved through the use of Slavin's methods. As Slavin puts it, cooperative learning helps ensure "success for all."

However, like other types of instruction, cooperative learning's value is limited if it is not employed carefully and creatively. Students do not automatically learn more by working together. Cooperative learning in Edison's instructional program is marked by these characteristics.

It usually is preceded by a well-crafted lesson. Cooperative learning is a COMPLEMENT *to other instructional activities.*

It provides an engaging opportunity for students to REINFORCE *or cement skills and concepts the teacher has introduced.*

It builds in a means of DETERMINING *each student's degree of mastery of the skills and content presented in the lesson.*

This last point is critical, for without it cooperative learning may not benefit all students. Without a means of ensuring individual accountability, a few students in a group can do all the work and derive all the advantages, while the rest of the group gains little.

Cooperative learning offers students more reasons to work hard and more ways to succeed.

When Helping Is Not "Cheating"

When properly applied, cooperative learning benefits all learners. Teaching others is a powerful means of reinforcing one's own learning. By helping their slower peers master the skills or concepts needed to complete a task, more able students strengthen their own understanding. In turn, slower students gain from the individual attention and reinforcement that peer tutoring provides and from receiving the same challenging curriculum as other students.

Cooperative learning also puts peer pressure to positive use. It becomes "cool" for students to help others learn. Cooperative learning offers students more reasons to work hard and more ways to succeed.

English as a Second Language and Special Education

The Edison Project serves all students, whatever their needs. Because our program builds in many opportunities for individualized learning and ensures that students get plenty of personal attention, it is well suited to students with most kinds of learning or physical disabilities. Our emphasis on multilingual proficiency encourages students whose first language is other than English to value their language heritage while they also learn English. Naturally, whether our program is the right one for a particular child is best determined by his or her family.

Assessing to Spot Special Needs

Based on current national figures, we estimate that roughly 9 percent of students in partnership schools will have some form of disability. We evaluate all students—with or without identified disabilities—as part of a process of drafting a Quarterly Learning Contract for each student. If the evaluation indicates that a student may be a candidate for special education (as defined by federal and state criteria), a formal assessment, conducted in cooperation with a student's family and local education authorities, is done. If those results so indicate, Edison prepares an Individualized Learning Plan and accepts responsibility for the student's success.

Language Diversity

Edison partnership schools appreciate the value of students from a plurality of backrounds in creating a rich language environment for learning. Language diversity is an opportunity as well as a challenge. As mentioned in the curriculum chapter, all Edison students participate in second-language learning. At the same time that all students with limited English proficiency are learning English, all non-Spanish-speaking students are learning Spanish as a second language at least through the eighth grade.

Students begin second-language study in the Readiness Academy, the optimal time to begin learning a new language. Students whose native language is Spanish maintain their native-language skills while they learn English. Spanish instruction emphasizes conversation and culture in the primary years, encouraging ease of use and natural interaction in everyday activities. As students progress through the Elementary and Junior academies, reading and writing are gradually mastered in addition to continued improvement in conversation. As a result, Spanish-speaking students, typically the largest group of non-English-speaking students, feel comfortable in their interactions with other students from the very start. All students learning English as a second language do so in a supportive environment customized to address local needs and interests.

Technological Support

Edison believes in an inclusive approach to special education and ESL instruction, and we have the equipment and expertise to match our philosophy. Our technology system, for example, includes devices to provide access to virtually all curriculum materials for students who have difficulty reading, visual or auditory impairments, or physical limitations.

Special Education

Students who struggle to see or read can have text read to them by computers equipped with synthesized speech.

Students without use of their arms or legs can operate a computer with a switch controlled by chin movements.

Students with perceptual problems can enlarge the words on a screen or change the color of letters or the screen background.

Students who have trouble writing can use multimedia writing packages.

In addition to innovative technology, Edison offers an instructional program that recognizes students' different learning styles. And Edison's assessment system recognizes many forms of expression, giving students a variety of ways to demonstrate knowledge and accomplishments.

ESL Instruction

Students use software in their native languages.

Students can communicate with speakers of their languages in other countries through electronic networks.

Students are helped by software that translates into their native languages.

Technology extends English learning time and individualizes instruction.

Professional Development in Special Education for All Teachers

Teachers receive regular training in special education as part of their ongoing professional development. At every school, several teachers—often reading teachers—also are trained as diagnosticians of learning disabilities and as skilled providers of specialized programs. In addition, schools have the services of speech therapists, psychologists, and other specialists.

Latecomers to Edison

When students of elementary age or older enter a partnership school, they face standards and expectations that are likely to be much higher than what they experienced before. We do what is necessary to bring these students as quickly as possible up to the level where they can successfully meet these challenges.

To determine the kinds of assistance new students may require, they are evaluated for their current knowledge and skills. We estimate that unless students have been in an Edison program for at least three-quarters of their schooling, most will need additional time with teachers or tutors, after school or during summer sessions, to meet our high standards. Naturally, this will not be true of all students. For example, many students who enter the Edison program in the sixth grade will be doing college-level work by eleventh grade. Others may take an extra quarter or two, perhaps even a full year, to meet the standards of the academy in which they enter the Edison program.

We are confident, however, that all students in a partnership school will progress faster than in a traditional school setting. The Edison program is designed to welcome and serve any student who wants to work with us.

Assessment and Accountability

Like curriculum and instruction, assessment—how progress is measured—determines what and how well students learn. The Edison Project has designed a new system of student assessment that supports our ambitious curriculum and instructional program. It is a system that provides principals and teachers with continuous and constructive information about student performance, information that specifies how students are doing relative to the standards of each academy and assists teachers in tailoring an instructional program to each student's learning needs.

Reliable and objective, such information also shows our education partners how well The Edison Project is delivering the results for which we are accountable. Careful assessment means real accountability. This chapter describes how assessment and accountability work hand-in-hand in the Edison school design.

The Case for Better Assessment in Schools

To be effective, an assessment program should measure student progress toward meeting explicitly stated curriculum objectives and standards. When a curriculum has one set of goals and an assessment program has another, a school is not likely to satisfy either.

Most schools today are required by state or local authorities to administer standardized

tests. In many cases, these tests reflect just a fraction of what good schools expect students to learn. Should a school downplay much of its curriculum and focus instead on that part which affects its test scores and its evaluation by outside authorities? The logical answer is no, yet logic often is not the most potent force in such decisions.

Curricula call for students to think creatively, drawing knowledge from several disciplines to solve problems.

WHEN CURRICULUM MOVES FASTER THAN ASSESSMENT

Misalignment also occurs when assessment methods do not keep up with innovations in curriculum. As schools adopt curricular and instructional strategies that call for students to think creatively, draw knowledge from several disciplines to solve problems, work cooperatively or collaboratively, and produce multimedia presentations, these exciting developments require new methods of evaluation. Tests that gauge simple acquisition of traditional subject area skills and knowledge don't provide adequate reinforcement for these more sophisticated objectives.

A Fresh Approach to Assessment

All around the country, educators are working hard to bring assessment systems into alignment with new curriculum objectives. States are developing more broadly gauged instruments for monitoring student progress. Even individual schools are developing new approaches of their own.

The Edison Project also has taken a fresh approach to assessment. We view curriculum, instruction, and assessment as a coherent whole. As described in the previous chapters, our instructional program grows naturally out of our curriculum. The same is true of Edison's assessment system. It is designed to measure student progress toward meeting the high standards that shape our curriculum. This means that principals, teachers, and students focus on the educational points that truly matter.

SUPPORTING NATIONAL STANDARDS, TOO

Students who meet Edison's academic standards also will meet—and, we believe, exceed—most of the country's new standards of excellence. We have designed our curriculum to support the national education goals—such as greater proficiency in science and math for all stu-

dents—as well as educational standards developed by many states. We respect the concern of educators and citizens alike that all students acquire sound "basic skills," hence our requirement that all students be proficient readers by the end of the second grade. Students who perform well on Edison's rigorous assessments will perform well on other assessments, too.

Components of the Edison Assessment System

The Edison Project monitors student progress in a number of ways. Our curriculum spans five broad domains and includes more than one hundred explicit standards for each academy. Edison is committed to the reliable measurement of student progress across this wide spectrum. That means developing, in large part, our own evaluation system.

QUARTERLY LEARNING CONTRACTS

The system has several major components. The first and most important is the Quarterly Learning Contract, or QLC. A QLC is drawn up for each student and updated at the end of each three-month quarter. It is a formal expression of expectations and objectives agreed on by the school, the student, and his or her family. A quarterly progress report for student and family, written by the student's adviser and teachers, details how successfully the terms of each quarter's contract are fulfilled. This process is diagnostic and developmental, not mechanical or judgmental. Its purpose is to help students reach the standards set for each academy.

The QLC and the quarterly reports are fine-grained assessments of how each student is doing and what needs to be done. In addition to the student's responsibilities, the contract spells out the school's obligations, as well as those adult family members agree to assume.

Writing the progress reports and updating the contracts are essential to the success of the QLCs. To ensure that partnership schools have the time and opportunity for these tasks, Edison reserves two days at the end of every quarter expressly for this assessment process.

STUDENT PORTFOLIOS

A second key component of Edison's assessment system is cumulative portfolios of student work. Every day students engage in exercises, projects, and activities aimed at helping them achieve explicit academy standards, and their work products are direct indicators of how they are advancing. Schools maintain for every student an expanding portfolio of classroom work. As part of Edison's professional-development program, teachers also learn how to evaluate this important means of "authentic assessment."

An exciting element of Edison's approach to portfolio assessment is the building of electronic portfolios through our technology system. These include not only written materials but also voice recordings, videos of student performances, and multimedia presentations prepared by students. Electronic portfolios also are easily transmitted and shared through Edison's computer network, a feature that enhances the reliability and objectivity of portfolio assessment. (For a description of the Edison network, the Common, see the chapter on technology.)

EMBEDDED ASSESSMENTS

The portfolio system is supported by "embedded assessments," exercises and projects designed by The Edison Project to assess specific skills and knowledge. These assessments are not simply tests. They are carefully constructed learning experiences, consistent with the instructional program, that provide reliable indications of student progress. They give schools standardized measures of student performance and help principals and teachers calibrate other work in students' portfolios.

> Edison is committed to the reliable measurement of student progress across its wide spectrum. That means developing our own evaluation system.

ACADEMY PROMOTION REVIEW

The final component of Edison's unique assessment system is the Academy Promotion Review. As they near the conclusion of traditional grades two, five, eight, ten, and twelve, students are evaluated for promotion from one academy to the next (though exceptional students may be evaluated and advanced earlier). To be promoted, students must meet three-fourths of the academy's standards in each field, such as math, science, English/language arts, practical arts and skills, and so on. These evaluations are done by each partnership school and reviewed by The Edison Project. Portfolios, QLCs, and, at some junctures, formal examinations form the basis of them.

Edison believes that for students to be successful learners, they must be fully prepared for each new step in their educational journey. When students graduate from an academy, they are ready to move on with confidence.

EXTERNAL ASSESSMENTS

In addition to the assessment measures Edison has devised, we expect students to take the standardized tests required of all public school students in the state and local jurisdictions

in which a partnership school operates. (As states and districts develop newer, more "authentic" assessment measures, partnership students participate in these as well.) All long-time Edison students take Advanced Placement examinations in the Collegiate Academy. These externally validated measures of achievement help us rate the progress of students in partnership schools compared with students locally and nationally. They also assure our partners of the high student and schoolwide performance for which The Edison Project is accountable.

The Value of Ongoing Assessment

Assessment is about more than measuring student progress. It is an integral part of the learning process—for teachers as well as students. As teachers become more adept at evaluating student work, they develop a clearer sense of their own instructional goals and become better at setting them. This is especially important with respect to multidisciplinary projects, where learning objectives can be hazy.

> Well-designed evaluations tell principals and teachers not only what students know or don't know, but why.

Assessment is also a valuable diagnostic process. Well-designed evaluations tell principals and teachers not only what students know or don't know, but why. Edison's assessments provide such constructive feedback, particularly through our technology system. As teachers mark student work electronically, they can create a database of students' successes and failures, then analyze it for patterns and relationships that explain why a student is struggling in one area or making progress in another.

Ongoing assessment also is a boon to students, who sometimes fail because teachers and families don't realize the scope of a problem until it is too large to miss—and usually not easily solved. Edison's assessment system is designed to catch minor difficulties before they grow into major struggles.

These ongoing assessments and instructional adjustments are best reflected in the QLC. To provide a clear picture of the thoroughness of this assessment document, we offer a sample here.

Sample Quarterly Learning Contract

Student: Angela Bonilla
Parent(s)/Guardian(s): Robert and Christine Bonilla
Academy: Primary, Third Year
Teaching Team: Ms. Green, Mr. Garcia, Mrs. Lee, Miss Jackson

ACADEMIC COMMITMENT: AREAS OF FOCUS

English/Language Arts

Angela is close to meeting the standards in all aspects of this subject, including reading, writing, speaking, listening, and viewing. However, she has work to do in some key areas. This quarter she will focus on improving her skills at comparing particular elements and devices in different types of literature. Among these, Angela will practice identifying setting, alliteration, and figurative language. She will memorize and recite a short work, her choice being William Blake's poem "Spring." Further, Angela will continue to improve her editing and revising skills by taking another student's first draft and improving it, from correcting spelling and grammar to reordering sentences and adding descriptive detail.

History/Geography/Civics/Economics

Angela has a significant amount of work to do in this area, but if she continues to learn at her current pace, she should have no trouble mastering the academy standards in these subjects. She is still learning about key historical figures; this quarter her work will include a 1-page report on George Washington and a short oral presentation on Martin Luther King, Jr. In geography, she will practice location skills by identifying continents and large bodies of water on a globe. She will continue learning "The Star-Spangled Banner" and other songs representing America's heritage. Angela will continue her investigation into the roles of the president, Congress, and the Supreme Court begun last quarter; this quarter she will complete her part of a report entitled "Dear Mr. President" being prepared by her cooperative-learning group.

Angela feels she has grasped the basic concepts in economics and she will demonstrate her understanding to Ms. Green on the upcoming class trip to the art supply store. She will explain the class's "wants" in materials, the flexible nature of those "wants," and how the class will become the "producers" of art using these "resources."

Science

Angela needs to work harder in this area because she has some catching up to do. She will practice observing and recording while doing science investigations and generally work on distinguishing all of the key skills and processes she uses. She will work on strengthening her understanding of basic weather patterns, including

how water evaporates, clouds are formed, and water falls back down to earth as rain. In reading articles in student science magazines, she will practice displaying scientific "habits of mind" in interpreting the information, such as asking questions from her reading or identifying topics for further study.

This quarter Angela will investigate water and how objects float. She will develop a plan for her first experiment, record her findings, sum up her results, then plan her second experiment.

Mathematics

Math is one of Angela's strongest subjects and she has just about attained all of the math standards for the Primary Academy. She will continue to practice estimation and measurement skills in conjunction with her science activities, such as weighing objects and looking for connections between weight and an object's ability to float. Angela has learned the multiplication table up to 5 x 5 and will work with Mrs. Lee to learn up to 8 x 8. Since she also likes to create and solve word problems, she will continue to help make up problems for the class to solve. Mrs. Lee also will give her more advanced problems to keep her challenged.

Angela will continue to help John, currently in year 2 of Primary, with basic geometric figures. She will help John draw pictures using triangles, circles, rectangles, and squares and contribute a drawing of a cube, a new figure that she recently learned.

Arts

Angela has progressed well, though she has several areas where she needs to focus. She will continue to improve her sight-reading skills until she is comfortable using them to sing an unfamiliar song. She needs to work on differentiating more quickly between eighth notes, quarter notes, and half notes. Angela will practice recording and explaining her views on her own visual artwork, as well as works by professional artists. Finally, she will read *Regina's Big Mistake* by Marissa Moss and explain what Moss has to say about creativity, sharing her own opinions, too.

Character and Ethics

Angela has been very well behaved in class, listening when others talk and cheerfully doing her part of group tasks and projects. She also has worked diligently on her homework assignments and completed most by their due date. She has learned to ask politely when she needs something. Her behavior in the lunchroom has improved greatly. In the next quarter, Angela will continue to help keep the school hallways orderly and take care of her plants in the Primary garden.

Angela will read to the class her current favorite story, *The Velveteen Rabbit*, the fairy tale of how a boy's companionship transforms a toy rabbit into a "real" rabbit. She will highlight for the class some of the ethical aspects of the story, mainly as they relate to friendship, loyalty, and caring for another. Angela will then respond to questions or comments from other students.

Angela also has some areas in which she will try to improve. When playing kickball on the playground, she will follow the rules with no arguments. She will be more patient with her tutee, John, when he has trouble learning a new math concept.

Health and Physical Fitness

Angela has learned to read the heart monitor while playing or exercising. She will continue to practice adjusting the pace of her physical activity to stay at the target level and develop a sense of what is appropriate without having to look constantly at the monitor. During this quarter, she will aim to see some improvement in her heart rate. Angela will also read *Teeth* by John Gaskin and *Exercise: What It Is, What It Does* by Tom Hoffman, applying the information in these books to her own health habits.

Practical Arts and Skills

Although she has made good progress in learning basic practical skills in all subjects, Angela will continue to work on several that need improvement. Her major project this quarter will be to develop a strategy for keeping pests out of the garden. She will research the topic, present her plan to the class, and respond to suggestions. She will read *In My Garden: A Child's Gardening Book* by Helen Oechsli, as well as other books and resources on pest prevention. She will implement her plan, assess the results, then make modifications or improvements.

Intensive Proposal

Angela will work with several classmates on an intensive entitled "From Garden to Market." She will explore the economic concepts involved in planning what to produce, purchasing the materials or resources needed, and selling at a price people will pay. Using language and computer skills, she will describe and chart the stages in developing a product and bringing it to market. She will practice geography skills by identifying where in the United States various crops are grown. And she will explore the nature of edible and inedible plants through scientific investigation.

Community Service

Angela will continue to help John with new topics in math and encourage him to practice ones he has learned. In conjunction with her practical arts project, Angela will work to keep the garden free of harmful pests. In addition, Angela will monitor the hallway bulletin boards. She will make sure student work is tacked securely in place and check for damage, such as rips or tears, so the work can be mended or removed from display.

Student's Commitment

To the best of my ability, I, Angela Bonilla, will pay special attention to all of the responsibilities listed above, while also carrying out my other school activities.

Teacher Adviser's Commitment

To the best of my ability, I, Anita Green, will

1. Ensure that Angela finds or is aware of the resources she needs to complete her projects and other responsibilities.

2. Continue to provide Angela with ongoing feedback and suggestions on her work.

3. Keep Mr. & Mrs. Bonilla informed of Angela's progress and advise them on any areas where they might provide her with additional assistance.

4. Pay particular attention to Angela's work in science and help her to catch up in those areas where she is behind.

Parents' Commitment

To the best of our ability, we, Robert and Christine Bonilla, will

1. Ensure that Angela is delivered to school on time each day.

2. Continue to respond to requests for conferences by her teachers and review materials sent home within a couple of days from the date they are received.

3. Promptly voice any concerns about, or disagreements with, assignments, evaluations, or general treatment of Angela throughout the quarter.

4. Continue to review all of Angela's homework assignments but pay special attention to those in science. We will help her to the best of our ability, without doing the assignments for her. We will express to her clearly and consistently the importance of science, as well as our confidence in her ability, coupled with hard work, to succeed in this area.

5. Teach a two-day computer course for local partnership teachers.

6. Take Angela to a free performance of *The Secret Garden*.

The Importance of Accountability in the Edison Plan

Signing a Quarterly Learning Contract is only the beginning. Accomplishing its provisions is the goal. Edison believes that standards must be set as attainable goals, not as preludes to failure. This is possible only if students, families, and the school all have the means of keeping track of what has been accomplished and what remains to be done.

REGULAR REPORTING TO FAMILIES

Partnership schools provide students and families with six kinds of school-initiated information on progress and problems.

Continuous informal feedback, both written and verbal, from teachers to students concerning schoolwork and behavior.

Communication on an as-needed basis between staff and families by way of conversations, meetings, voice mail, E-mail, and notes.

Quarterly reports on individual students' progress, based primarily on performance related to the previous QLC. Families receive a written (or recorded) report from the school and are asked to meet with their child's adviser. Family members review samples of the student's work and are helped to see how that work meets academy standards, or what improvement is needed to meet those standards. Two days are set aside for these reports and meetings at the conclusion of every quarter.

Intensive appraisals, which assess a student's major quarterly projects.

Annual summary reports, which assess a student's position in relation to the standards and expectations of his or her academy.

Promotion reports, which are issued after a student completes the requirements and meets the standards of each academy. The school supplies the family with a detailed appraisal of the student's accomplishments, strengths, and weaknesses. (A copy goes into the student's permanent record.) Also included is an evaluation of the student's performance relative to state and national standards.

REGULAR REPORTING TO THE PUBLIC

Results on major assessments—those designed by Edison and those desired by public authorities—are broadly available. In fact, we plan to produce annual reports detailing how partnership schools are performing. The Edison Project believes that openness and access to objective information are vital for an enterprise to be fully accountable to the public it serves. Partnership schools will set a new standard for each.

Teachers and Principals

Think of the people who made the biggest difference in your life. Chances are that several of them were teachers. A great teacher influences a student's life in ways that resonate through the years. A great teacher makes school a place of inspiration. Teachers make a huge difference in the lives of schools. So what can schools do to make a difference in the lives of their teachers?

The Edison Project has involved many outstanding teachers in creating a school design that works effectively to support teachers, encouraging and allowing them to do their best work. Those teachers have shared what is important to them as professionals—what kind of school environment promotes excellence in teaching and learning and what sparks their curiosity and nurtures their creative spirit.

Out of this discussion has come Edison's "plan for professionalism." This chapter describes that plan, built on four main points:

A collegial organization

A path for career development

A system that supports educators

Ongoing professional development

A Collegial Organization

The Edison school design organizes teachers into teams, where they work together to develop students' minds and bodies. As outlined earlier, each academy—a small school-within-a-school—is made up of houses of 90 to 120 students. Each house is staffed by a team of four teachers who are supported by specialists in music, art, physical education, and world languages. Since students remain in a house for the two or three years they spend in each academy, teachers get to know each student. The team approach offers other advantages as well. Teachers can:

SHARE OBSERVATIONS *and discuss ways to help individual students, because each teacher is familiar with each student in the house*

COMPARE NOTES *about what works and what doesn't in the areas of curriculum, instructional approaches, and materials specified for their academy*

HELP ONE ANOTHER *solve problems and celebrate successes, because there is a heightened sense of collegiality and shared responsibility for all students in a house*

COORDINATE *their instruction so that activities in one subject reinforce learning in others*

Because each team is composed of teachers with varying levels of experience, teaming also fosters on-the-job professional development. Teachers learn by observing one another and offering comments and suggestions. Offering constructive criticism to a colleague requires even the most experienced teacher to think hard about philosophy and practice. However, we don't simply advocate having veteran teachers advise novice instructors. We encourage experienced teachers to consider the ideas of newer teachers, who provide a fresh view of classroom practices.

Edison also supports teachers in forming successful collaborations through workshops and seminars that help build communication skills and address the difficulties, frustrations, and joys inherent in teamwork.

A Path for Career Development

To attain the benefits of promotion—increased pay, autonomy, and status—teachers in many systems have to leave the classroom behind. The Edison Project has designed a career path for teachers that awards greater status and pay but lets them continue to do what they do best (and love most): teach. There are four levels of teaching professionals in partnership schools.

MASTER TEACHERS

The professional and organizational leaders of their teams and schools, master teachers hold a position of great responsibility and respect. They demonstrate leadership in their interactions with students, administrators, colleagues, families, and the local community. Master teachers achieve this distinction within a school by meeting these qualifications:

A MASTER'S DEGREE *in their subject-area field and at least seven years of teaching experience*

CONSISTENT SUCCESS *in the classroom*

CREATIVITY AND CRAFT *in meeting the needs of a variety of students*

SKILL AND RESOURCEFULNESS *in drawing up lesson plans and curriculum units and sharing them with colleagues, who use them with equal success*

UNITS OR OTHER TEACHING MATERIALS *published in the Edison curriculum*

TACT, CARE, AND MATURITY *in their interactions with colleagues, families, and community members*

Master teachers act as the organizational heads for their teams. In this role, they coach and serve as mentors to less experienced colleagues. They also lead and encourage productive discussions and collaborations among team members and promote effective, ongoing communication between the team and family and community members.

Master teachers also assist the principal with team evaluation. They recommend ways to balance the strengths and weaknesses of team members to ensure that the needs of all

students in the house are met. They also follow student progress to monitor the team's overall effectiveness.

Master teachers coordinate with Edison's professional-development specialists assigned to their school. With assistance from the principal, master teachers help to design and implement a professional-development program for their team. They also oversee the development of teaching units by their colleagues, testing and refining them for dissemination through Edison's computer network.

Finally, master teachers serve in a general leadership capacity within the school. They assist in hiring new teachers; they look broadly at programs within their academy to ensure that all students' needs are met; and they serve on a Principal's Advisory Board, which addresses general concerns of the school.

The Edison Project has designed a career path for teachers that lets them continue to do what they do best: teach.

SENIOR TEACHERS

These veteran educators demonstrate mastery of their field, versatility in instructional methods, capable classroom management, as well as collegiality, confidence, and initiative. They develop curricula for publication and serve as resources for their colleagues. They also play an active role in the professional development of the other teachers on their team. Senior teachers may work toward becoming master teachers by creating and disseminating curricula, attaining an advanced degree in their field, and participating in organizational and managerial training.

TEACHERS

These college-educated, highly motivated individuals join their teams fresh from a successful experience as a resident in a partnership school, or after a few years in a public or private school. Like all partnership teachers, they are responsible for designing curricula, mastering instructional strategies, and working effectively with colleagues.

RESIDENTS

Edison has borrowed this concept from medicine: intensive professional development while practicing one's craft. Residents are not required to meet regular certification requirements. Instead, they enter the system with a provisional certificate while they attain alternative certification. The program accepts applicants with a four-year degree in a subject area, such as science or math, who have successfully completed Edison's summer training institute. Residents then work under the direct supervision of a master teacher, who helps them plan

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a quarterly course of professional development, as well as long-term goals. They spend two years in our professional-development program, which is being planned in accordance with the National Board for Professional Teaching Standards.

Evaluating Professional Progress

Edison's teacher-evaluation process is performance-based. Although principals do the evaluating, Edison provides guidelines for what and how to measure teacher performance. First, we judge teacher success by students' progress. We also look at the quality of the curriculum a teacher creates, the fluency with which he or she uses varied instructional methods, and the nature and depth of relationships with colleagues, students, and families.

The portfolio allows teachers to demonstrate ways they have strengthened their teaching.

To demonstrate performance, each teacher maintains a portfolio that documents his or her work over a year's time. The portfolio allows teachers to demonstrate ways they have analyzed, evaluated, and strengthened their teaching. The portfolio contains examples of curriculum units, evidence of collaborative work, communication with families and community members, and student work that demonstrates professional progress. This "authentic assessment" lets teachers highlight ways they have honed their craft.

Principals: Leading the School Team

As the educational leaders of their schools, principals also are involved in the professional development of all teachers in a school. Research on effective schools demonstrates again and again the importance of a strong, inspiring leader who sets clear goals and holds high expectations for all staff and students. Although we believe that great teachers are critical to the success of a school, we know that the role of the teacher can be enhanced with the support of a great principal. Edison looks to principals to be courageous, inspiring, and energetic; eager to learn new things; and willing to be held accountable. They work to create a school environment that encourages and rewards risk taking and creativity. Principals in partnership schools are committed to this kind of leadership.

A SKILLED TEACHER FIRST

Partnership principals are grounded in the practice of education. They are instructional leaders who are skilled teachers. Much of a principal's day is spent working with master

teachers to provide for the professional-development needs of each team and actively seeking new and challenging opportunities for professional development for all staff. With input from master teachers, principals evaluate teacher portfolios and carefully weigh each teacher's accomplishments before recommending promotion to a higher level.

Setting Common Goals and Creating a Sense of Mission

Partnership principals are committed to building a school community with common goals and a strong sense of mission. To accomplish this, they lead a recruitment and selection process that enables them to "compose" faculties that share their goals and mission. Principals make all decisions in the area of teacher hiring and, when necessary, of releasing teachers who are not meeting the school's expectations. Principals model the cordial, caring, and collegial behavior expected of all members of a partnership community.

Principals also manage the noninstructional staff and services in their schools, overseeing the technology team, facilities group, and the directors of social services and special programs, to make sure that their performance is of the same high quality and compatible with the academic standards of the school.

The Key Community Liaison

Just as important, principals play a crucial role in creating and maintaining ties to the community. They bring together local leaders from business, the arts, media, and the nonprofit sector to form a Board of Friends. The principal meets with the board regularly and keeps the members informed of school affairs. The principal also maintains open channels of communication with families through a Parent Advisory Council, which offers a formal way for families to share their points of view on school issues.

A System That Supports Educators

The Edison Project expects a great deal from principals and teachers, and we expect to give a great deal back. Teachers and principals in partnership schools have optimum working conditions. Through efficient and creative uses of time and technology, we change an educator's life in dramatic ways.

Every principal and teacher has use of an office, with access to a copying machine, phone, voice mail, and fax machine.

Every principal and teacher has a portable computer.

Every teacher has a wealth of curriculum resources at his or her fingertips. Edison's technology system offers databases filled with information related to every subject area on current research, instructional innovations, curricular materials, and lesson plans.

Every teacher has two hours of unrestricted time each day to use in whatever professional way is needed: team meetings, lesson planning, or catching up on professional reading. In addition, administrative systems, such as those for ordering materials and supplies, are designed with input from teachers and administrators to ensure ease of use and maximum efficiency.

Professional Development

The Edison Project has made a serious investment in professional development for all partnership teachers, principals, and school staff—whether new to the field or seasoned hands. We believe it is an ongoing activity, one that must be site-based and intensive. Above all, our professional-development program is aligned with our program of curriculum, instruction, and assessment. What we teach teachers is grounded in what they need to teach their students. The Edison plan for professional development is built on four key beliefs:

Great teachers are also great students

—students of their craft, students of their field, students of their students, students of their colleagues, and students of the world.

Teachers learn best what they need to know.

Teachers learn by doing and by reflecting.

Teachers learn together and they learn alone.

Our program nurtures in every teacher a spirit of inquiry. We give teachers time and resources to explore their craft and field, and organize them in ways that enhance their ability to learn from one another.

Our professional-development plan emphasizes:

- *Alignment with curricular and instructional strategies*
- *Resourcefulness*
- *Facility with the tools of teaching*
- *Clear intermediate and long-term goals*
- *Modeling instructional methods*
- *Teamwork*
- *Individual responsibility and accountability*
- *Demonstration of mastery through projects, intensives, and portfolios*
- *Evaluations with high standards*
- *Building a teaching community*
- *Commitment and perseverance*

A TWO-PART PROGRAM

The professional-development program has two distinct parts: a six-week summer session that introduces all members of the education team to Edison's philosophy, curriculum, instructional methods, and use of technology; and an ongoing program for the house-level teaching teams. The Edison Project recognizes that our goals are ambitious, and we aim for a staff-development program that phases in our program carefully and realistically. Everything cannot be mastered at once.

Summer Staff Development

In the months before a partnership school opens for the first time, teachers participate in a series of professional-development activities conducted by The Edison Project. Through evening and weekend seminars, as well as an intensive six-week summer session, teachers are immersed in curriculum and standards, instructional approaches, assessment methods, and technology, management, and administrative systems. By the end of the summer session, house teams are formed, and teachers have designed a course of study for the year with their teammates and principal.

House-Based Program

The professional-development program continues over the course of the school year. Edison's professional-development experts assist master teachers and the principal in designing a program for each team. Each master teacher works with team members to identify professional-development goals and activities. The master teacher then records each teacher's learning contract, logs meeting notes, and assists colleagues in meeting their individual goals.

To support these professional-development activities, Edison offers teachers a variety of learning opportunities, such as interactive distance-learning courses, on-site workshops, and coaching sessions. Teachers can use technology to foster professional improvement by watching their own lessons played back on videotape or through access to an on-line storehouse of teaching research and expertise through the Edison central office.

Edison offers teachers interactive distance-learning courses, on-site workshops, and coaching sessions.

Teachers and administrators will also take advantage of professional-development opportunities outside the partnership school, sharing ideas and techniques with colleagues. As well, mentoring relationships are structured outside of houses, such as when science teachers work with one another across grade levels.

Recruiting Outstanding Educators

The ideals of The Edison Project have struck a responsive chord in principals and teachers across America. Thousands have asked to become a part of our endeavor.

Partnership schools draw principals and teachers from local, state, and national candidate pools. Recruiting campaigns outlining Edison's mission and goals will be launched on college campuses and in areas where partnerships have been established. However, partnership principals with staffing needs look first for qualified individuals in the local area. Teachers who are rooted in their community and know the students and families in it bring a heightened sensitivity to a school. We value such site-based expertise.

Selection Practices

The principal of each partnership school is selected by The Edison Project in close consultation with the district superintendent. The principal then takes on the responsibility of selecting all teachers. No principal will have a staff member assigned to or forced on his or her school. The principal also retains the power to recommend transfers for teachers who do not perform up to standards or are unhappy with the program.

Edison Standards for Educators

The Edison Project has a set of general qualities and standards it expects teachers and principals in partnership schools to demonstrate and follow.

A sense of mission. Good educators are driven by the conviction that all students can and want to learn, and that all students have the right to test themselves against the highest standards.

An openness toward others. Successful educators open doors into the community; they trust and welcome input and help from others who can contribute to each student's education. They are in constant touch with their key partners, students' families. They also cultivate long-term relationships—within the school and within the larger community—that help them to be better teachers. Confident educators work collaboratively, share strengths, overcome weaknesses, and learn from one another. A school's responsibility for students is a collective one and requires collective effort.

Accomplishment and knowledge. Partnership teachers demonstrate a deep understanding of their major field and fluency with various instructional methods. If they are new to teaching, they show the sparkle of promise, of talent to be nurtured and developed.

The joy of discovery. We are looking for educators who know a lot and want to learn more. Great teachers and principals welcome all questions—especially those they may not know the answers to—and help students learn how to search for the answers. They know that teaching is more than telling and that learning is more than listening. They encourage in their students—and keep alive in themselves—the joy of discovery.

Technology

One of the most exciting aspects of the Edison school design is its use of technology to enhance productivity, efficiency, creative expression, communication, and access to information. We use technology the way it is used in the real world. Most school systems have not been able to make the investments in infrastructure, curricular change, and professional development necessary to use twenty-first-century technologies to the fullest. Edison has.

These five elements form the basis of Edison's technology system—one that can grow as technology changes and as a school community becomes more adept with equipment.

COMPUTING POWER FOR ALL. *Every student, every principal, and every teacher in a partnership school has access to computers. Every student's family eventually receives a computer for use at home.*

A SCHOOL NETWORK. *Partnership schools form a network that links schools to homes, schools to other schools, and schools to the world. On a more personal level, the network links students, teachers, administrators, and families.*

TOOLS FOR LEARNING. *We provide tools—word processing, spreadsheets, databases, simulators, microcomputer-based probes and labs, Computer-Aided Design (CAD), and drawing programs—that encourage and facilitate research, exploration, and creative expression.*

RESOURCES *that bring the world into the classroom. We provide a rich landscape to explore: video and electronic libraries geared to our educational program and students' ages and abilities. We also provide gateways into on-line information sources and services.*

TECHNOLOGY INTEGRATED *into the life of the school. All of these elements are integrated into a powerful, easy-to-use system that makes technology an everyday part of students' lives. And all use of technology is meaningfully connected to the curriculum.*

This chapter describes the technology as it works in partnership schools. Naturally, no school is transformed overnight. Generally, it is a three- to five-year process. But with every new partnership, the goal is to introduce and integrate technology into the life of the school as quickly, efficiently, and sensitively as possible.

A Computer in Every Home

When students do homework, they should be able to use some of the same tools they find at school. Students with a home computer have a powerful tool to aid thinking, writing, and problem solving. But not every family can afford a personal computer. The Edison plan places a computer in every student's home, at an age- and ability-appropriate level, to ensure equal access to the tools that enhance learning.

Although access is the most compelling reason to provide a computer in every home, there are many others. Most students are drawn to the computer and willingly work on skills and concepts that would bore them as paper-and-pencil tasks. Home computers also are linked to the school network so that students can retrieve homework assignments and hand them in electronically. And a computer automatically creates the makings of a study center in each home, an important factor for encouraging good study skills and a learner's success.

COMMUNICATION LINKS, TOO

A home computer provides a way for families to keep up with their children's activities, communicate easily with teachers, and take part in the life of the school community. In experiments where computers were placed in students' homes, most notably The Buddy Project in Indiana, parent involvement increased dramatically—and that, as research shows again and again, greatly promotes students' interest and success in school.

In the first few years of a partnership, the primary functions of the home computer are word processing and communication through electronic mail or E-mail. (Each student and family members are fully trained in the use of a

The Edison plan places a computer in every student's home, to ensure equal access to the tools that enhance learning.

computer before one is installed in the home.) We imagine that several years into a partnership, the school-home link will include more complex software programs and, in due time, interactive multimedia.

Family members benefit, too. Some parents learn new job skills, such as word processing. Others use the computers to learn to read. Toward that end, The Edison Project can make adult literacy and GED programs available to families through the home computers.

A Computer for Every Educator

In most schools today, the ratio of students to computers is about 18 to 1, and the ratio of computers to teachers is not even known. In partnership schools, the proportion is easy to calculate: 1 to 1. Every teacher and every administrator has a portable laptop. And in addition to their personal computers, teachers and administrators have access in their office areas to equipment that is standard for other professionals, such as telephones, fax machines, and copiers, as well as a multimedia station and CD-ROM drives for reviewing software.

> The goal is to introduce and integrate technology into the life of the school quickly, efficiently, and sensitively.

Researchers, educators, and technology experts agree that one of the major reasons technology has not had more of an impact in schools is that classroom teachers do not have the equipment. Once teachers adopt technology as a tool for their own work, it is easier for them to bring it into their teaching.

Technology for the Computer Generation

The technology environment of the school as a whole is so rich that it does not make sense to talk in ratios. There are more than enough places in the school where anyone can work on a computer whenever he or she wants.

Within each house of each academy is found this typical array of technology:

- *Each classroom has several desktop computer stations with CD-ROM drives hooked into the schoolwide network.*
- *Each house has a number of laptop computers for student fieldwork and data collection, as well as for individual work at school.*
- *In each classroom and the house Collaboratory—a community work space—is a high-end multimedia authoring and presentation station that includes CD-ROM, videodisc, and videotape players.*
- *Each classroom has a video camera, tape recorder, VCR, and large-screen TV.*

A LIBRARY WITH BOOKS AND MORE

The media center in each school is a communications center in the best sense of the word. In addition to plenty of books, computers offer direct access to external databases and resources, such as Internet. Sophisticated printers, copiers, and specialty software are housed in the center's desktop-publishing area, where students produce newsletters or the school newspaper. In a nearby production studio, students do video editing and recording for class projects, or broadcast a news program to houses around the academy.

Specialty areas, such as science labs and art rooms, also are equipped with computers and software designed for more specific applications, such as microcomputer-based laboratories.

The Network: Creating a Learning Community

The Edison computer network provides a forum for all members of the school community. We call it the Common.

Communities need a place where their citizens can gather. In a village this public space is the town square, or common. In the Edison systems design, the Common is an educational gathering place for people and ideas. It is the electronic network that connects all partnership schools.

When a student, teacher, administrator, or parent sits down to work—at school or home—he or she plugs the computer into the network (or dials it up with a modem) and

is automatically on the Common. One's own digital folder, E-mail, and so on are all within "clicking" distance. It is each person's virtual desk and place within the digital school community, accessible from any computer that is plugged into the network.

What the Common Can Do

Students can WORK ON ASSIGNMENTS, then hand in their work electronically; communicate with teachers and other students in their class, house, academy, or at other schools; collaborate on projects with students in other partnership schools; participate in experiments and share their data on-line with others around the nation; have a worldwide discussion of current events.

Teachers can take attendance; SELECT AND PLAN CURRICULUM; build lessons; align their teaching with Edison or state frameworks; give assignments; correct homework; monitor student work; assess and record student progress; purchase materials and equipment; and communicate with other teachers, administrators, supervisors, family members, and students.

Administrators can manage most ADMINISTRATIVE TASKS, such as compiling attendance records and reviewing bus schedules. They also can evaluate teachers' work, keep strict control of budgets, and communicate with all constituents, including the public school district within which the school operates.

Families can, at their convenience, find out what is going on at school and COMMUNICATE MORE EASILY with teachers and other families.

Everyone in the partnership community can TAKE PART IN SCHOOL AFFAIRS and debate through the Common's Town Hall, a community bulletin board. At any given time, it may "post" anything from a debate on an important school issue, to a mind bender to solve, to a request for partners to do research on a particular topic.

All ELECTRONIC COMMUNICATIONS of the organization, such as E-mail and bulletin boards, are facilitated.

Students and teachers have ACCESS TO DATABASES AND LIBRARIES including a student-built reference library.

Teachers can use INTERACTIVE CURRICULUM frameworks to build their day-to-day curriculum, retrieve lessons, create new ones, find resources, and order materials.

Ongoing professional development is supported through ON-LINE DISCUSSIONS among teachers at partnership schools and curriculum developers at Edison Central Services about lessons, projects, and instructional methods.

BEST COPY AVAILABLE

It is an authentic communication and writing context for DEVELOPING THE LITERACY SKILLS of reading, writing, and communication called for by the Edison curriculum standards.

It is a CURRICULAR TOOL for teaching organizational and study skills and such computer-related skills as database navigation, storage protocols, and information management.

TECHNOLOGY BECOMES A SECOND LANGUAGE, providing users with a practical skill that will be of great value in the workplaces they will enter.

This schoolwide network offers far-reaching educational benefits. It supports the construction of knowledge by students and teachers. It provides access to electronic libraries of information and makes it possible for people to organize themselves for work. Direct access to information also encourages new forms of interactions among students, between students and teachers, between classrooms, and between students and the world. By facilitating communication among people at various levels and places within an organization, a network helps to build a sense of community.

Tools and Resources for Active Learning

The Common provides students, teachers, and administrators with a variety of teaching and learning tools. Programs for word processing and drawing, as well as a calculator, database, and spreadsheet, are built in. The Common also has the ability to launch third-party software—content software selected by the teacher to support a class activity. For example, primary students use such software to publish their own books or record data from their garden.

NEW TOOLS FOR EDUCATORS

E-mail offers principals and teachers new opportunities for professional discussions. They can direct a question about curriculum to the person who wrote it. They can share ideas or plan joint projects with administrators or teachers at other schools.

In addition, Edison is developing two powerful tools to support and enhance instruction and assessment—an electronic mark-up tool and dynamic interactive curriculum frameworks. Both are databases. The electronic mark-up tool gives teachers multiple views and ways to assess and review student work. The curriculum frameworks help adminis-

trators and teachers find or develop lessons and plan curriculum. In a district where teachers are using a form of an electronic grade book, they estimate savings of fifteen hours a month. That releases valuable teaching time.

NEW TOOLS FOR STUDENTS

For students living in the Information Age, one of the most important skills to acquire is the management of information: how to find what you need to know, how to evaluate it, and how to use it. Computer databases are marvelous search engines for finding information. In turn, teachers are irreplaceable guides for learning how to evaluate information, use it, and transform it into knowledge.

Original source documents, geared specifically for the Edison curriculum, also are available to students. When students in the Junior Academy study the Mayas, for example, they can tap into a resource collection on this ancient culture.

The Edison Library of Ideas

A unique feature of the network is the Edison Library of Ideas, a student-created reference resource.

The Encyclopedia is a public database that contains reports on a variety of topics written by students. Students at every grade level are involved with research and reporting, often drawing on writing, video, sound, and visuals to create the final product. Outstanding reports are nominated by teachers, approved by an outside review panel, and then published in the Encyclopedia, where others may access them for reference.

The Muse is the literary counterpart to the Encyclopedia. Student works of fiction and visual arts are published or displayed in a systemwide review.

A Plan for Successful Implementation

The Edison plan for technology use in schools was developed with the help of leading educators and technologists. An important part of it is professional development and training. Using technology is not only learning to use new equipment; it is adjusting to a cultural shift in the life of the entire school community. Edison is committed to supporting a school's professional staff to make this change an exciting period of growth and learning and to minimize frustrations.

The Tech Support program begins as soon as we contract with a school district. Elements of that program include:

A three-year technology implementation strategy, with clear goals for each year.

Assessment of the school building, hardware, software, and level of staff and student preparedness.

An installation plan tailored to the community. For example, some communities may be wired with fiber; each community has special needs in linking homes and school.

Technology workshops held throughout the six-week summer session before the opening of school.

Ongoing professional development and tech support during the school year. For example, teachers learn to use the dynamic frameworks and electronic mark-up tools and are introduced to curricular software.

Setup of a drop-in computer center for families, teachers, and students. This center operates in the first year of a partnership school before students take their computers home. It provides a place for workshops and training in the use of hardware and software.

Hiring a technology team for each school, whose members troubleshoot problems and see that the system runs smoothly.

Make New (Technological) Friends

Margaret Mead coined the phrase "immigrants in time" to capture the idea that in a technological world, children grow up with a culture that is very different from that of their parents, even if they grow up in the same town. As educators, we need to understand and share that culture; we must start where the kids are starting. We cannot predict what students will need to know in the world in which they will work as adults and grow into old age. But we can give them powerful tools with which to build that future. Some of these tools are electronic and very new; others—integrity, compassion, responsibility, curiosity, delight—are as old as civilization itself.

The Edison Partnership Community

Every great school functions as a community, a place with an ethos of shared purpose and responsibility, an atmosphere of security, caring, and mutual respect. A thriving school community has norms and customs by which people conduct themselves for the benefit of all and governance arrangements that function reliably and effectively.

Each school has an advisory body in which students have a voice.

Great schools also fashion close and collaborative relationships with their students' families. They welcome family members as their partners. And they reach out to community agencies, groups, and institutions to reinforce and supplement their own best efforts. Effective educators understand that, in the words of the African proverb, it takes an entire village to raise a child.

The Edison Project wants its partnership schools to be a vital part of the village. This chapter explores how we can fulfill that goal.

Students' Place in the School Community

As citizens of their school community, students have rights and responsibilities that they have had a hand in articulating. The emphasis on character and ethics in the Edison curriculum fosters a deep understanding of what it takes to nurture a healthy community.

A VOICE IN SCHOOL DECISIONS

Students in the Elementary, Junior, Senior, and Collegiate academies are encouraged to participate in school governance. Each school establishes its own student-government structure, and each has an advisory body in which students have a voice. Student government functions as a forum for students to present viewpoints and make suggestions to the administration about everything that affects their school lives.

A Helping Hand From a Mentor and Guide

Each student is assigned a faculty adviser for the duration of his or her stay in an academy. This faculty member not only functions as a mentor and guide through the academy, but also assumes responsibility for the student's overall well-being. The adviser watches for signs of emotional or physical problems and communicates any concerns to the student's family and appropriate school staff.

Each student meets regularly with his or her faculty adviser for private discussions or as part of a group of advisees the staff member oversees. In this and other ways, students have the security that comes of knowing their needs are understood and met.

A Code of Honor and Discipline

Students deserve a school that is safe and conducive to learning. Edison works with each partnership school to help make its campus safe. Yet, in the most profound sense, the security of a school resides in the attitude and leadership of every person in it. A safe environment is secured and maintained most successfully through a clear and scrupulously enforced code of acceptable behavior and an obligation shared by everyone to report violations.

Edison's honor code and discipline system are firmly grounded in and reinforced by our ethics curriculum. The honor code is signed by all students, families, and administrators. It derives from the belief that citizens should establish norms and rules, and abide by their own law, rather than act solely from fear of punishment. Although administrators will be vigilant in matters of health, safety, and adherence to federal, state, and local statutes, the best discipline is self-discipline, and we seek every opportunity to nurture it.

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Every principal and those working with him or her on issues of discipline decide how the school handles minor breaches of school rules or the honor system. However, interference with learning and any behavior that endangers another's safety are not tolerated in partnership schools. Edison would rather help a student than suspend or expel him or her, but we do so when such action is justified.

The Role of Families in the School Community

Parents and other family members are a child's first teachers. As such, families' needs and concerns are always of interest to the educators in partnership schools.

A KEY ROLE IN THEIR CHILDREN'S SCHOOL LIVES

We believe that we have an obligation to ensure that each student has an adult—parent, guardian, or friend—who pays close attention to his or her schoolwork and physical and emotional development. Therefore, every student is enrolled with an adult who follows the child's progress and well-being through frequent contact with teachers and administrators. When necessary, the school helps to identify an "education guardian" for a student.

When necessary, the school helps to identify an "education guardian" for a student.

Each school also looks for ways to make the best use of family members' talents and enthusiasm. They participate in whatever way best suits their interests and schedules—as a classroom volunteer, tutor, coach, club adviser, or mentor/supervisor for a business-sponsored student internship, for example. Although not every family is able to participate directly in the life of the school, the diverse menu of opportunities and the extended school day encourage greater family participation than occurs in most schools.

A Right to Know and to Be Welcome in a School

In return for a pledge from families to participate in the school, we pledge to maintain an open-door policy. Orientation seminars help familiarize families with the school organization and curriculum, as well as special programs and services. Regular and frequent communication occurs between school and family in many different forms. From one-on-one visits with teachers at school to telephone and electronic communication, ideas and concerns are conveyed with ease. This communication is facilitated by computers in every student's home and voice mail for the principal and all teachers. Every principal has an electronic bulletin board for announcements and a suggestion box open to the entire school community. And to make sure that all partnership families can get access to the electronic mail system, each is taught how to use it.

Each school also contains a Parent Center (where facilities are adaptable), which serves as a "homebase" for family members when they visit the school. It's an inviting place that provides

information about curriculum, parenting, and school activities, and where family-related seminars and meetings are held.

A Voice in Shaping School Policies

At the discretion of each school principal, family members also have a role in shaping parts of the school's program and policies. Toward this end, each principal convenes a Parent Advisory Council that meets regularly to discuss school issues and to hear families' concerns and suggestions.

The School as a Citizen of the "Village"

Raising children is a complicated business. Educators have long had to take on work that goes far beyond math or spelling lessons. Today, students' problems seem more challenging than ever. At no time has it been more true that schools must reach into the community for help, and that the community must marshal its resources to respond.

The Edison Project affirms its responsibility to meet the diverse needs—physical, social, emotional, as well as academic—of every student. The school provides some kinds of assistance directly. Others are properly the responsibility and special competence of organizations or professionals within the community. However, it is the school's job to open its doors to those agencies that can best supplement its care.

A CONSORTIUM OF SOCIAL SERVICE PROVIDERS

To facilitate establishing links with community professionals and agencies, all partnership schools receive the full-time attention of a social services director who serves a cluster of schools in a district or state. The director organizes a consortium of social service providers whose abilities and resources match each school's needs.

No two consortia will necessarily be identical, but typical participants include:

- *Public and private social-welfare agencies*
- *Law-enforcement agencies*
- *Hospitals or health-care clinics*
- *Civic, fraternal, and voluntary organizations*
- *Institutions of higher education*
- *Religious organizations*
- *Recreation departments*
- *Child advocacy and civil rights groups*
- *Private and public employers*
- *Big Sister and Big Brother organizations*
- *YMCA, YWCA, Scouts, and similar youth associations*

Poorly distributed or conflicting information from different agencies can confuse families and deprive them of needed services. Organizing these resources into one cohesive group—the consortium—is a proven model of success in many communities.

Where it is practical, consortium members carry out their work from a location within the school itself. This doesn't mean that the school assumes the responsibility for the administration of social services; rather, for the convenience and benefit of partnership families, the school is the best place for the providers to operate. We will do everything possible to support them within our community. The extended school day and our commitment to serve all community students and families help to make this kind of relationship more feasible.

No good school is an island unto itself. Recognizing the many bridges among home, school, and community, The Edison Project helps make them as sturdy as possible, welcomes traffic in all directions, and views those bridges as valuable assets in raising our children.

A System That Serves

An excellent school is built from the ground up by the people who are responsible for its results. Teachers and administrators must feel a personal investment in the success of their school. They must have a clear say in how things are run, what is taught, how it is taught, and who teaches it. That premise is at the heart of the Edison organizational design and is the guiding spirit of our relationship with each school. The Edison Project's Central Services provides the support, guidance, and resources to enable partnership schools to thrive.

Serving Students, Teachers, Principals, Schools

The chief responsibility of Central Services is to give each school what it needs to achieve high results without stifling its creative fervor. Our mission is to serve students' interests, and our central office ensures that we make good on this pledge. Toward that end, Central Services commits resources to:

CURRICULUM RESEARCH AND DEVELOPMENT, *including the production and dissemination of learning materials*

ASSESSMENT *of students and school personnel*

RECRUITMENT *of principals and teachers*

PROFESSIONAL DEVELOPMENT *for the education team*

FACILITIES IMPROVEMENT *and upkeep*

A Streamlined Administration

Proportionally, The Edison Project spends little on central administration. Computer networks help us maintain a streamlined organization by eliminating the need for duplicate staffing at the campus and central office levels. Functions such as requisitioning supplies are performed almost exclusively by computer at individual school sites. This open, interactive system also encourages more efficient communication between partnership schools and Central Services.

An open, interactive system encourages efficient communication between partnership schools and Central Services.

The central office is organized around four major functions: facility services, the education program, financial controls, and marketing. This chapter focuses on the first two functions and describes ways that Central Services administers to partnership schools—from overseeing and funding the upgrading of school buildings, to developing an innovative curriculum, to helping to recruit outstanding educators.

The Operations Division

The Operations Division at Central Services is in charge of the facilities at each partnership school. In this capacity, the division director and staff oversee school improvement projects as well as general upkeep of buildings and grounds.

A COMMITMENT TO UPGRADE SCHOOL FACILITIES

The Edison Project has reserved funds to bring school buildings, when necessary, up to the high standards that characterize our entire education program.

To ensure high-quality work within time and budget, Edison has joined forces with Bovis Management Systems Inc., an internationally recognized leader in the building industry with an extensive record of successful school projects. As manager of a facilities improvement project for the Houston Independent School District, Bovis is working with some thirty architects to improve handicapped access; install emergency paging systems; replace defective windows, frames, and doors; repair heating and air-conditioning systems; modify restrooms and corridors; and upgrade mechanical systems. The company also is currently doing a similar project in more than two hundred schools in Chicago.

With twenty-four regional offices, including Chicago, Los Angeles, Houston, and New York, Bovis has the experience and talent to work in any public school system. Bovis and Edison together also offer the buying power of a national program, with state-of-the-art procurement and tracking systems. At the same time, we invite local contractors and suppliers to work at each school site, maximizing the impact of a partnership on the local economy.

Renovating to Meet Edison Program Requirements

As soon as The Edison Project enters into a partnership with a school system, Bovis begins a review and analysis of the facilities, done in cooperation with local school authorities. This facilities team arrives at shared solutions to such issues as:

What does an integrated technology system do to the configuration of classrooms?

Where can teachers work privately?

How can the community take better advantage of school facilities?

In addition to renovation options, the facilities team produces a feasibility survey that defines the scope of repairs and repainting and identifies the safest and most efficient design for infrastructure upgrades and routing of computer and phone cabling. An energy audit suggests improvements in electrical and heating systems and operating procedures.

Apart from the work guaranteed in the partnership contract, the facilities team may also assist district personnel with other building improvement projects, such as major deferred maintenance or expansions.

Improving Security

Edison and Bovis also analyze building safety, focusing on grounds and building layout. Customized solutions to security problems may include different kinds of lighting, video monitoring, different use of common spaces, or patrolling—in short, whatever is needed to ensure that students and staff are safe on campus, regardless of the neighborhood around it.

Monitoring and Maintaining Facilities

A new entrance decor, bright lighting, gleaming floors, and bold graphic displays and murals are some of the visual aspects that immediately identify a partnership school. To maintain this attractive and motivating appearance, the Operations Division assumes full responsibility for the cleanliness and efficiency of the building and grounds. A building services staff, put in place by Edison, reports to the principal, who sets its priorities.

The work of the Operations Division in each school also includes planning regular cycles of preventive maintenance, performing routine inspections, and reporting on building conditions to the district.

The Curriculum Division

This division is headed by a director, who supervises three basic functions: curriculum and instruction, student assessment, and educational technology.

CURRICULUM AND INSTRUCTION

Headed by a deputy director who is accomplished in the field of curriculum development, and staffed by experienced curriculum coordinators and educational researchers, this department also works closely with more than one hundred consultants from a range of academic fields, many of whom are principals and classroom teachers. The work of the department includes:

Developing the standards that describe what students are expected to know and be able to do in each of the six academies. This work was completed in early 1994 with the publication of six books of standards.

Building frameworks for each academy of recommended materials, model lessons, effective projects, and instructional programs. This work has been done with input from principals, teachers, and experienced curriculum developers.

Monitoring research into effective instructional practices and updating methods and materials. In addition to these approaches to helping our curriculum stay current and lively, Edison's electronic network allows for dissemination of teacher-written lessons and projects to partnership schools around the country. The department reviews teacher-generated materials and suggests revisions before they go on-line.

STUDENT ASSESSMENT

Much of the work of developing the assessment system used by partnership schools is done in association with firms skilled in student evaluation. Key responsibilities of the deputy director and assessment staff include:

Developing a measurement system to gauge student progress in meeting each academy's standards. These measures include a combination of assessments embedded in the curriculum, systematic portfolio evaluation, and formal examinations.

Monitoring testing requirements of states and districts and analyzing the alignment of those testing programs with Edison's curriculum. We want to know precisely how our education program matches the student evaluations our partners expect us to employ.

Devising a reporting system to serve as the basis of our performance contracts with public school systems. Our contract states explicitly the gains we expect students to make; this department recommends how those gains should be measured.

Monitoring and reporting student progress. Once schools are operational, this department keeps track of all ongoing assessment measures and informs our partners of student progress.

EDUCATIONAL TECHNOLOGY

Technology is not an add-on at partnership schools; it is essential to the education program. To accomplish this integration, the technology department—composed of experts in hardware, software, networks, and education—works closely with the other members of the Curriculum Division. This team's responsibilities include:

Designing the configuration of hardware used in partnership schools and students' homes. With the help of leaders in software development, staff members have crafted a management system that allows everyone in the school community to use technology extensively and creatively.

Overseeing the development of original education software. In this capacity, the technology team has created alliances with innovative individuals and software-design companies.

Constructing an implementation plan for schools. The goal is to help each school make an easy transition to a state-of-the-art technological environment.

Providing ongoing technological assistance to schools. The technology staff ensures that the technology coordinators in each school are knowledgeable and supported in keeping hardware and software up and running.

The Schools Division

It is through this office that the overall health of the partnership schools is monitored. The division director oversees three key areas:

RECRUITMENT AND PLACEMENT of principals and teachers

PROFESSIONAL DEVELOPMENT of the education staff

IMPLEMENTATION of curriculum and instructional methods

Reporting to the division director are the partnership directors, whose role was described in detail earlier. Each partnership director serves several schools, clustered by district or state, and provides principals with a local contact who can quickly and easily find the right person at Central Services to whom to address a question or problem.

TEACHER RECRUITMENT

Although teachers are hired by principals, the Edison recruitment staff provides backup and support in finding good candidates and in establishing hiring standards and guidelines. Although we advise teaching candidates to apply directly to local partnership schools, the recruitment office also maintains a national database of available teachers and positions around the country. When a partnership school has an opening to fill, we can help match a talented individual to that job.

PROFESSIONAL DEVELOPMENT

The professional-development team organizes and manages the initial orientation for all school personnel. It also provides ongoing staff development in such areas as curriculum and instruction.

A Promise to Our Partners

The central administration of The Edison Project is committed to developing a system that allows the resources and ideas of each school to flow freely to all. It relies on Central Services and its capable staff to direct, but never to overwhelm, the creative energy thriving at each partnership school.

The Edison Team

The school design described in this book is the result of a comprehensive research and development effort involving professionals drawn from the worlds of education, technology, government, communications, and business; consultations with more than one hundred other leading experts; and the commitment of millions of dollars. We believe that The Edison Project is one of the most ambitious efforts to think in a fresh way about school design. We are eager to blend the fruits of our labor with the wisdom and experience of school and community leaders around the country.

Among those who have worked to create the Edison partnership school plan are these individuals, who together represent years of education and management experience.

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founding partner and president of The Edison Project
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deputy director of curriculum
former associate superintendent for curriculum, instruction, and assessment, California Department of Education, and deputy assistant U.S. secretary of Education, teacher

Dominique Browning
founding partner and director of schools
former assistant managing editor, Newsweek, *and executive editor,* Texas Monthly; *teacher*

Charles Carlson
director of public school partnerships
former executive vice president, Computer Curriculum Corporation; teacher

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former professor, Stanford University, and senior fellow, The Brookings Institution

Lee Eisenberg
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former editor-in-chief, Esquire

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Michael Finnerty
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former vice president for finance and administration, Yale University, and former budget director and secretary to the governor, State of New York

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Sandy McCarroll
former deputy commissioner for educational programs, State of Florida; teacher

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